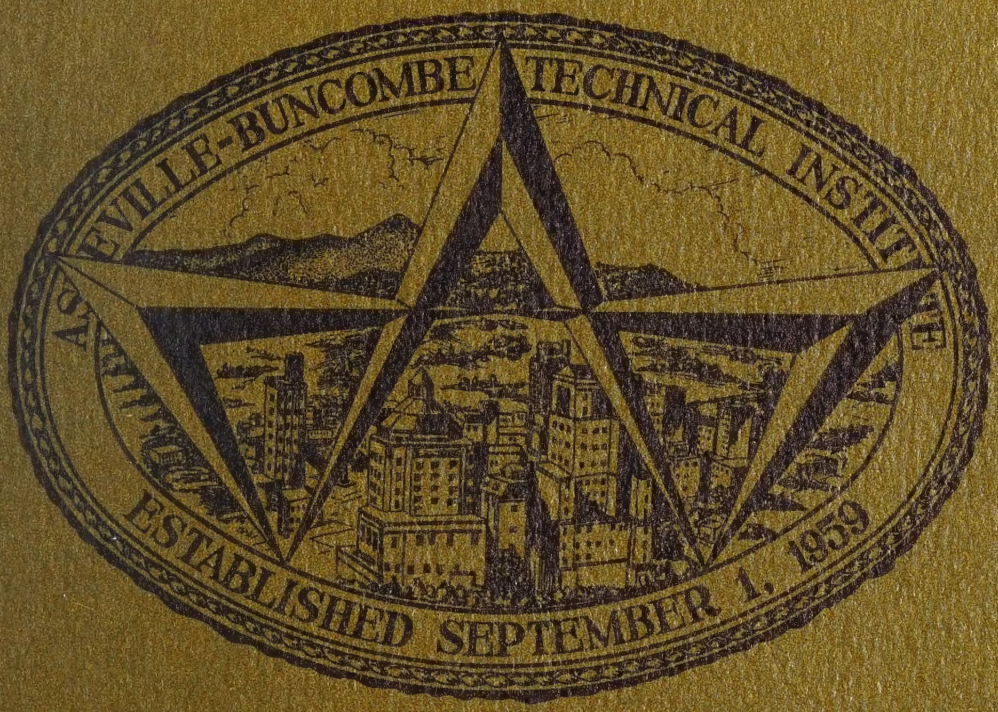

EVENING SCHOOL BULLETIN

ASHEVILLE-BUNCOMBE TECHNICAL INSTITUTE

1973-1974

This bulletin should not be considered a contract between Asheville-Buncombe Technical Institute and any prospective student. All charges for tuition and fees are subject to change as required by the Board of Trustees. Also curriculum offerings may be altered to meet the needs of individual departments.

ASHEVILLE-BUNCOMBE TECHNICAL INSTITUTE

340 Victoria Road
Asheville, N. C.

Recognized and Approved By

North Carolina State Board of Education
North Carolina Department of Community Colleges
Division of Vocational Rehabilitation
Veterans Administration

Member of

American Association of Community and Junior Colleges
North Carolina Department of Community Colleges
Student Services Personnel Association
Occupational Directors' Association
Association of Community College Business Officials
Association of Deans of Instruction, N.C.C.C.S.

Accredited By

North Carolina Board of Nursing
American Society of Clinical Pathologists
American Medical Association
Southern Association of Colleges and Schools

Evening Bulletin

Volume 4
1973-74

1973

SEPTEMBER

S	M	T	W	T	F	S
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30						

OCTOBER

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NOVEMBER

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1974

JANUARY

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FEBRUARY

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31						

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JUNE

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JULY

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EVENING SCHOOL CALENDAR 1973-74

FALL QUARTER

Registration	September 4, 5
Orientation (Faculty)	September 5
Classes Begin	September 10
Classes End	November 15
Total Class Days	40

Holidays

Thanksgiving	November 16-25

WINTER QUARTER

Registration	November 26, 27
Classes Begin	November 28
Classes End	February 21
Total Class Days	42
*Inclement Weather Make-up Days	February 25-March 5

Holidays

Christmas	December 19-31
New Year's	January 1

SPRING QUARTER

Registration	March 6
Spring Orientation (Students and Faculty)	March 7
Classes Begin	March 11
Classes End	May 23
Total Class Days	43

Holidays

Easter Monday	April 15

SUMMER QUARTER

Registration	June 3
Classes Begin	June 4
Classes End	August 15
Total Class Days	42
Graduation	August 23

Holidays

Independence Day	July 4

*Up to four days lost because of inclement weather will be made up during this period.

INSTITUTE CALENDAR 1973-74

FALL QUARTER

Registration and Orientation	September 4, 5
Faculty In-Service Education	September 6, 7
Classes Begin	September 10
Classes End	November 19
Total Class Days	51
Instructor Work Days	November 20, 21
Holidays	
Thanksgiving	November 22, 23

WINTER QUARTER

Registration	November 26, 27
Classes Begin	November 28
Classes End	February 21
Total Class Days	53
Instructor Work Days	February 22
Holidays	
Christmas	December 20-31
New Year's	January 1
*Instructor Vacation	February 25-March 5

SPRING QUARTER

Registration	March 6, 7
Classes Begin	March 8
Classes End	May 24
Total Class Days	54
Instructor Work Days	May 27, 28, 29
Holidays	
Good Friday	April 12
Easter Monday	April 15
Instructor Vacation	May 30, 31

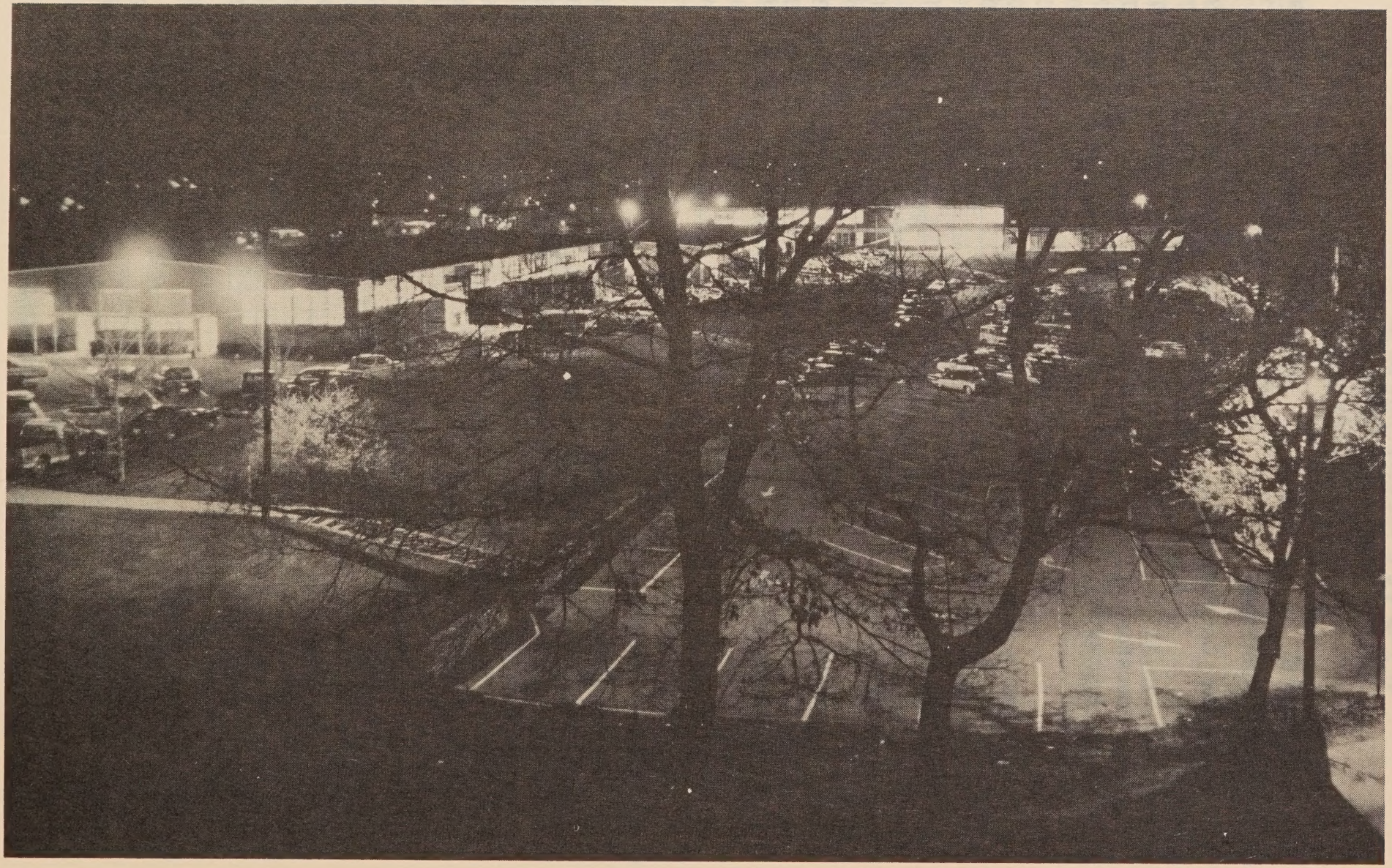
SUMMER QUARTER

Registration	June 3
Classes Begin	June 4
Classes End	August 20
Total Class Days	55
Instructor Work Days	August 21, 22, 23
Graduation	August 23
Holidays	
Independence Day	July 4
Labor Day	September 2
Instructor Vacation	August 26-30

*Up to four days lost because of inclement weather will be made up during this period.

TABLE OF CONTENTS

Enrollment will determine offering or continuing a curriculum.



ADMINISTRATION

Thomas W. Simpson ..... President
Brewster C. Adams ..... Dean of Evening Programs
Mrs. Frances Johnson ..... Registrar
Miss Jane Luther ..... Counselor
Miss Donna E. Hawks ..... Associate Librarian
Mrs. Barbara Kitchens ..... Secretary for the Evening Programs
Mrs. Marie Farley ..... Bookstore Clerk
Miss Cheryl Cordell ..... Switchboard Operator

FACULTY

Part-time evening instructors are employed on the basis of their knowledge of the specific subject they are to teach. Some may be trained teachers, while some may be selected because of the technical knowledge they have acquired through work in industry and/or training.

The State Board of Education policy permits some full-time day instructors to be employed to teach in the evening on a part-time basis depending on the need. Part-time personnel may change from quarter to quarter to allow for the necessary flexibility in scheduling courses.

CURRICULAR EDUCATION

This bulletin is intended as a supplement of the regular catalog. Curricular outlines are the same as for the day program except that course sequence and length of study may vary. Students may register for one or several courses during any quarter. Prerequisites will be adhered to at all times.

CONTINUING EDUCATION

The concept of continuing education during the entire lifetime of the individual is made available by the adult education classes at Asheville-Buncombe Technical Institute. These include: vocational courses for pre-employment and on-the-job training; adult basic education classes for individuals desiring a higher educational level; a management development program for industrial and business personnel; hospitality education for the tourist, hotel-motel, and restaurant industry program; and a general adult and community services program to offer the general public a variety of avocational courses for personal enrichment.

All continuing education classes are non-curriculum, vary in length, are held wherever space is available, are conducted both day and evening, and are taught by instructors selected by the Dean and Directors of the continuing education program.

Any adult, eighteen years of age or older may enroll in these courses. Exception: Individuals sixteen years of age and older and not officially enrolled in public schools may register for adult basic education.

Most of the classes are given at no cost to the participant. In some, where a textbook or materials are required, the student will be charged for these. There is never a tuition cost.

In some courses a certificate is issued by Asheville-Buncombe Technical Institute and the Department of Community Colleges.

ADULT BASIC EDUCATION

An important area in continuing education is that of adult basic education. The program is designed for any adult who has not completed an elementary or high school education. Free classes offer the opportunity to study basic reading and writing, English, reading comprehension, math, social studies, and science. The program can assist an adult in passing the equivalency (GED) test.

Classes usually meet two nights a week, and a person may enroll at any time.

All materials are designed for adults with emphasis on individual needs and interests. At all levels, instruction is closely related toward helping the student to better meet his adult responsibilities.

Continuous classes are held Monday and Wednesday evenings on campus and throughout the Buncombe-Madison County area. Additional classes can be started in most any location where a sufficient number of interested adults can be assembled.

HIGH SCHOOL EQUIVALENCY

An adult who has not completed high school may take a series of General Educational Development (GED) tests. Upon attaining a passing score of 225 points with no single test score below 35, a High School Equivalency Certificate will be awarded. This certificate is generally accepted on a basis equal to a high school diploma for employment, promotion, or further education.

The G.E.D. tests cover five broad areas: English expression, literature, mathematics, social studies, and natural science. They are administered at the Institute.

The following requirements must be met before taking the G.E.D. tests:

1. Minimum age: 19, or 18 if out of regular school at least six months.
2. Residence: current North Carolina resident.
3. Make application for tests on official blanks that are available at A-B Tech.
4. Cost: a fee of $3.00 for the testing.
5. Have a valid vocational, educational, or other purpose in applying.
6. An appointment must be made through the Chief Examinator (Learning Lab).

MANPOWER DEVELOPMENT PROGRAM

The manpower development program of A.B.T.I. is designed to assist the unemployed individual obtain employment and to help the under-employed person find a better job. This is accomplished by eight weeks of instruction including adult basic education with emphasis on helping those who do not have a high school diploma obtain the G.E.D., and an equal amount of human resources development training to teach the trainee how to apply for a job, methods of keeping the job, how to communicate and cooperate with fellow employees, etc.

The trainees are selected, based on their needs, their sincerity, their work history, and their motivation and attitude. The applicant must be at least eighteen years of age, but young high school graduates are generally not accepted.

LEARNING LABORATORY

The purpose of the Learning Laboratory is to provide a facility for both curriculum students and the general public to meet their academic and vocational needs through the use of programmed or self-instructional materials.

With programs for any level of comprehension, the Learning Laboratory is designed for the following goals:

1. Provide the opportunity for students to increase their level of learning before entering a college or university.

2. Help prospective students remove any academic deficiency, thereby enabling them to enroll in our vocational or technical program.

3. Provide materials and instruction which help an individual to prepare for the General Education Development Test. The Learning Laboratory is a GED Testing Center. Tests are administered by the Coordinator. The High School Equivalency Program administered in the Learning Lab has been approved by the Veterans Administration. Veterans who have not completed high school may enroll in the Learning Lab **for 900 hours of** educational benefits.

4. Give instruction to anyone, eighteen years of age or over, regardless of educational background, in any of over one hundred academic and general interest areas, covering materials from the first grade through senior college level.

Since there are no formal classes, the student may begin at any convenient time and proceed at his own learning rate. An instructor is always available to give assistance and to determine if the student is progressing satisfactorily.

The Laboratory is open from 8:00 a.m. to 9:15 p.m., Monday through Thursday and from 8:00 a.m. to 4:00 p.m. on Friday.

There is no charge for study in the Learning Laboratory.

LIBRARY

A technical library is maintained by the Asheville-Buncombe Technical Institute for use by faculty and students. Library resources are also available to representatives of industry, and, in general, to any member of the community desiring to use its facilities. The library contains scientific and technical volumes as well as subject matter materials in all related fields and current magazines and journals. New volumes are being added every quarter in order to keep abreast with technological advancements. In addition, a very fine collection of fiction, paperbacks, and books of general reader interest is provided for recreational reading. The library is open both day and evening.

Hours: Monday-Thursday	8:00 A.M.-10:00 P.M.
Friday	8:00 A.M.- 4:30 P.M.
Closed each day	5:00 P.M.- 6:00 P.M.

GENERAL ENTRANCE REQUIREMENTS

Asheville-Buncombe Technical Institute operates an "Open Door" admission policy. Any applicant who has completed high school, or who is eighteen years of age or older and has completed at least eight units of high school, may be admitted to the Institute.

Placement into a specific course of study is based upon standards which will help to assure the applicant success in that course of study. Those who do not yet possess the background required by the course of study of his choice may be enrolled in preparatory courses designed to provide this background.

Applicants should be in good health with no impairment of vision or other physical defect which would restrict his ability in a particular field of work. A complete physical examination may be required.

Educational background, interest, motivation, experience and aptitudes will be considered when an application is submitted to the Institute.

ADMISSION PROCEDURE

Persons wishing to enroll at the Institute must complete the entire application process. This consists of the following steps:

1. Submit an application form.
2. Obtain a transcript of credits from the last school attended.
3. Complete the battery of admission and placement tests administered by the Institute.
4. Have a personal interview with the student services staff or other member of the administrative staff.

Upon receipt of the completed application form the Institute will schedule a date for the test administration and notify the applicant by mail. Transcripts should be mailed from the school directly to the Institute on the transcript form in use by that school.

Upon completion of the above procedure, each applicant will receive written notification of the action taken by the admissions committee.

TRANSFER CREDIT

The Asheville-Buncombe Technical Institute will accept credit for work completed in other technical institutes or colleges. Applicants for admission with advance standing should make application as a regular applicant and submit a transcript of work from prior schools. No credit will be permitted for work below a "C" or the average grade given by another school. Acceptance of such work will be at the discretion of the President.

CREDIT BY EXAMINATION

Students who have reason to believe they are proficient in a subject may request credit by examination. A written request must be made to the Department Chairman and a form for this request may be obtained from the Registrar.

The examination may be written, oral, performance, or all of these. Students failing such an examination may not take a second examination and will be expected to take the subject as a regular scheduled course. Each student must score above average in order to receive credit and the decision of the examining instructor will be final. No quality points will be awarded for credit by examination.

AUDITING COURSES

Students who wish to audit courses must register through regular registration procedures and must have approval of the department chairman responsible for the particular courses. Audit students do not receive credit but must adhere to attendance regulations. An audit intention cannot be changed to credit course after the "add-drop" day nor can credit courses be changed to audit courses. Audit work cannot be used toward diploma or degree requirements. (Audit students will enter class after all curriculum students have been registered, precluding audit students from taking the place of curriculum students).

ATTENDANCE POLICY

Regular class attendance is expected of all students. Instructors will keep an accurate class attendance record, and these records will become part of the student's official record. Absences are a serious deterrent to good scholar-

ship, and it is impossible to receive instruction, obtain knowledge, or gain skills when absent from class. Being late for class is also a serious interruption of instruction and continuous infraction cannot be permitted.

Absences may be permitted in the event of personal illness, death in the immediate family, or an official and approved school function. Students must inform each instructor if any of these occur. Each instructor will determine the validity of the reason for the absence.

It is the student's responsibility to contact each instructor for class and laboratory assignments missed. Arrangements must be made within twenty-four hours after returning to campus to make up work missed.

Excessive absences may result in the student being dropped from a class by the instructor. An appeal to the "Admissions Committee" must be made by the student within three days from the dropped date to be considered for reinstatement in class. Request for an appeal must be initiated by the student and directed through student services to the committee. The student will remain in class until the hearing is conclusive.

In the event that an instructor is not in class and arrangements have not been made, the class is dismissed after ten minutes. A roll must be signed by the students present and turned in to the Department Chairman, Division Director, or Instructional Dean.

DEAN'S LIST

1. Only a full-time student is to be considered. (A full-time student is defined as a student enrolled in a curriculum program, carrying a minimum of 12 quarter hours in the day program, or the maximum number of hours allowed in the evening program.)
2. Student is to have a minimum 3.50 quality point average to qualify for the quarter under consideration.
3. Student must maintain an overall 3.00 average with a 3.0 average in his major area.
4. Failures, incompletes, and withdrawals, pass or fail, will automatically eliminate a student from this list for that particular quarter. Students receiving credit for a course by examination are not affected.
5. The student's placement on the Dean's List will be made primarily by the Department Chairman.
6. After which, the Dean of Instruction will make the final consideration of the names.
7. The list will be compiled by the Registrar, sent to the Department Chairmen, and then to the Dean of Instruction, who will be responsible for the publication of this list in local and pertinent hometown newspapers.
8. This list will be published following every quarter in the Asheville papers

and in the hometown papers of qualifying students. (Allowing sufficient time for paper work.)

FEES

ADVANCE REGISTRATION FEES $15.00

Required of all full-time day students and full curriculum evening students as a condition of acceptance and enrollment. (This fee is credited to the fall quarter tuition payment).

Part-time per credit hour per quarter ..... $ 2.50
(less than 12 credit hours)

LATE REGISTRATION FEE ..... $ 5.00

STUDENT ACTIVITY FEE ..... $ 7.00

Full curriculum evening students, per year

NOTE: Students taking drafting courses should anticipate an instrument and equipment cost of $12.00 to $30.00 at the beginning of their first drafting course.

BOOKSTORE

A Bookstore is operated for the convenience of students and faculty. New textbooks, instructional supply items, and school spirit items such as class rings, decals, sweatshirts, etc. are available.

Graduation items are available through the bookstore at the following cost:

Degree:	Cap and Gown Rental	$ 6.00
	Diploma and Cover	$ 6.00
	Total	$12.00
Diploma:	Cap and Gown Rental	$ 5.00
	Diploma and Cover	$ 5.00
	Total	$10.00

Invitations, name cards, and billfold diplomas may be purchased through the Bookstore.

STUDENT INSURANCE

Certain risks are inherent in any work involving regular contact with mechanical and electrical equipment. While stringent precautions will be taken to insure safety, it is felt to be in the interest of all students to provide some measure of insurance protection.

A group policy, providing the desired insurance protection, will be maintained in effect by the Institute and all students will be REQUIRED to subscribe to such coverage. The cost of accident insurance to the student will be approximately $2.75 per year.

REFUNDS

Refunds amounting to two-thirds of the initial tuition payment may be requested if a student has official withdrawal during the first 10 calendar days of the quarter. No refunds will be made to students who withdraw without authority or who are dismissed for cause.

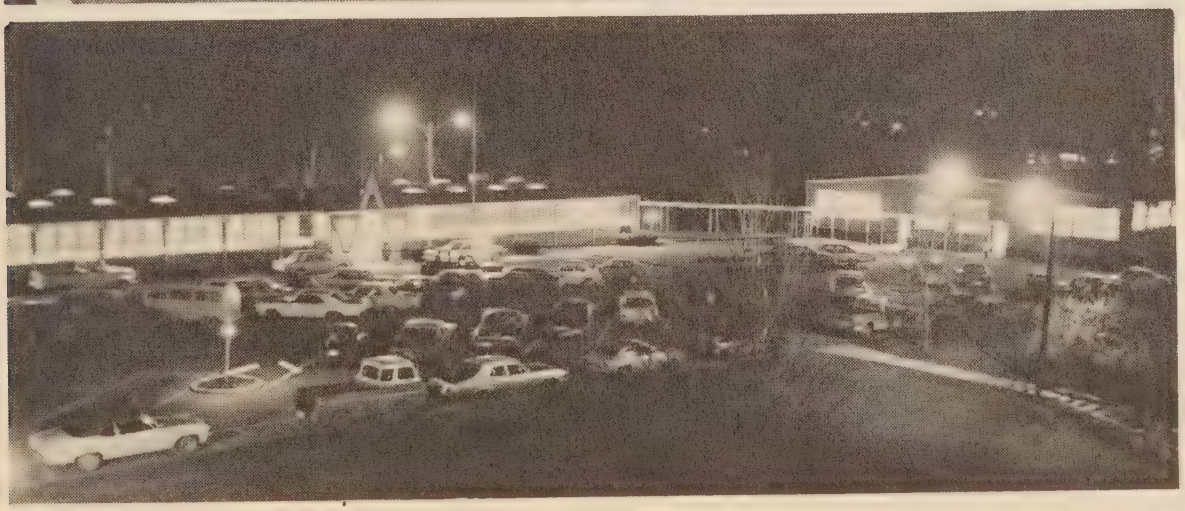
LOAN FUNDS

The Institute has several loan plans available for students who need financial assistance. Amounts up to one thousand dollars per year may be arranged by North Carolina residents who meet the qualifications of the various plans. Persons interested in obtaining funds should visit the Institute for more specific information.

Library Assistance

Guidance

A-B Tech at Night



BUSINESS ADMINISTRATION

A. A. S. Degree

(General Option)

FIRST QUARTER			Class	Lab	Credit
BUS	101	Introduction to Business	3	2	4
MAT	110	Business Mathematics I	5	0	5
			8	2	9
SECOND QUARTER					
ECO	102	Economics	3	0	3
MAT	111	Business Mathematics II	3	0	3
ENG	100	Reading Comprehension	1	2	2
PSY	206	Psychology	3	0	3
			10	2	11
THIRD QUARTER					
ECO	104	Economics	3	0	3
BUS	110	Business Machines	1	4	3
ENG	101	Fundamentals of English	3	0	3
			7	4	9
FOURTH QUARTER					
BUS	120	Accounting	5	2	6
MAT	112	Mathematics of Finance	3	2	4
			8	4	10
FIFTH QUARTER					
BUS	121	Accounting	5	2	6
BUS	123	Finance	5	0	5
			10	2	11
SIXTH QUARTER					
BUS	124	Finance	3	2	4
BUS	224	Introduction to Basic Cost Principles	3	0	3
ENG	102	Composition	3	0	3
			9	2	10

SEVENTH QUARTER

BUS	115	Business Law	3	0	3
BUS	229	Taxes	3	2	4
ENG	206	Business Communications	3	0	3
			9	2	10

EIGHTH QUARTER

BUS	116	Business Law	3	0	3
EDP	100	Introduction to Data Processing	3	2	4
ENG	204	Oral Communication	3	0	3
			9	2	10

NINTH QUARTER

BUS	239	Introduction to Marketing	5	0	5
SOC	201	Sociology	3	0	3
ENG	103	Report Writing	3	0	3
			11	0	11

TENTH QUARTER

BUS	235	Business Organization and Management	3	2	4
BUS	247	Insurance	5	0	5
			8	2	9

ELEVENTH QUARTER

BUS	233	Personnel Management and Supervision	5	0	5
BUS	219	Credit	5	0	5
			10	0	10

TWELFTH QUARTER

BUS	270	Managerial Decisions	3	2	4
ECO	106	Labor Economics	3	0	3
			6	2	7

BUSINESS ADMINISTRATION

A. A. S. Degree

(Accounting Option)

			Class	Lab	Credit
FIRST QUARTER					
BUS	101	Introduction to Business	3	2	4
MAT	110	Business Mathematics I	5	0	5
			8	2	9
SECOND QUARTER					
ECO	102	Economics	3	0	3
MAT	111	Business Mathematics II	3	0	3
ENG	100	Reading Comprehension	1	2	2
PSY	206	Psychology	3	0	3
			10	2	11
THIRD QUARTER					
ECO	104	Economics	3	0	3
BUS	110	Business Machines	1	4	3
ENG	101	Fundamentals of English	3	0	3
			7	4	9
FOURTH QUARTER					
MAT	112	Mathematics of Finance	3	2	4
BUS	115	Business Law	3	0	3
ENG	102	Composition	3	0	3
			9	2	10
FIFTH QUARTER					
BUS	120	Accounting	5	2	6
BUS	116	Business Law	3	0	3
ENG	103	Report Writing	3	0	3
			11	2	12
SIXTH QUARTER					
BUS	121	Accounting	5	2	6
ENG	206	Business Communications	3	0	3
SOC	201	Sociology	3	0	3
			11	2	12

SEVENTH QUARTER

BUS	122	Accounting	5	2	6
EDP	100	Introduction to Data Processing	3	2	4
			8	4	10

EIGHTH QUARTER

BUS	225	Cost Accounting	5	0	5
ENG	204	Oral Communications	3	0	3
BUS	258	Machine Accounting	1	1	1
			9	1	9

NINTH QUARTER

BUS	247	Insurance	5	0	5
BUS	270	Managerial Decisions	3	2	4
			8	2	9

TENTH QUARTER

BUS	219	Credit	5	0	5
BUS	123	Finance	5	0	5
			10	0	10

ELEVENTH QUARTER

BUS	235	Business Organization and Management	3	2	4
BUS	239	Introduction to Marketing	5	0	5
			8	2	9

TWELFTH QUARTER

BUS	229	Taxes	3	2	4
BUS	269	Auditing	3	2	4
			6	4	8

BUSINESS ADMINISTRATION

A. A. S. Degree

(Industrial Management)

			Class	Lab	Credit
FIRST QUARTER					
BUS	101	Introduction to Business	3	2	4
MAT	110	Business Mathematics I	5	0	5
			8	2	9
SECOND QUARTER					
ECO	102	Economics	3	0	3
MAT	111	Business Mathematics II	3	0	3
ENG	100	Reading Comprehension	1	2	2
PSY	206	Psychology	3	0	3
			10	2	11
THIRD QUARTER					
DFT	101	Drafting	1	5	3
ECO	104	Economics	3	0	3
SOC	201	Sociology	3	0	3
			7	5	9
FOURTH QUARTER					
BUS	233	Personnel Management	5	0	5
ISC	202	Quality Control	3	2	4
			8	2	9
FIFTH QUARTER					
ISC	203	Time and Motion Study	3	2	4
BUS	110	Business Machines	1	4	3
			4	6	7
SIXTH QUARTER					
ISC	204	Value Analysis	3	0	3
ISC	102	Industrial Safety	3	0	3
MAT	112	Mathematics of Finance	3	2	4
			9	2	10

SEVENTH QUARTER

ISC	209	Plant Layout	3	2	4
MAT	114	Basic Descriptive Statistics	3	2	4
			6	4	8

EIGHTH QUARTER

ISC	211	Work Measurement	3	2	4
BUS	120	Accounting	5	2	6
			8	4	10

NINTH QUARTER

BUS	121	Accounting	5	2	6
BUS	115	Business Law	3	0	3
ENG	101	Fundamentals of English	3	0	3
			11	2	12

TENTH QUARTER

BUS	224	Introduction to Basic Cost Principles	3	0	3
BUS	116	Business Law	3	0	3
ENG	102	Composition	3	0	3
			9	0	9

ELEVENTH QUARTER

ISC	251	Labor Problems and Labor Law	3	2	4
ENG	206	Business Communications	3	0	3
			6	2	7

TWELFTH QUARTER

BUS	235	Business Organization and Management	3	2	4
EDP	100	Introduction to Data Processing	3	2	4
			6	4	8

THIRTEENTH QUARTER

BUS	239	Introduction to Marketing	5	0	5
ENG	204	Oral Communication	3	0	3
			8	0	8

ELECTRONIC DATA PROCESSING

A. A. S. Degree

FIRST QUARTER			Class	Lab	Credit
EDP	101	Functional Wiring Principles	2	3	3
EDP	102.1	Introduction to Computer Technology	2	0	2
MAT	100	Basic Mathematics	5	0	5
			9	3	10
SECOND QUARTER					
EDP	102.2	Introduction to Computer Technology	0	3	1
EDP	104	Business Programming (SPS)	2	3	3
MAT	101	Algebra and Trigonometry I	5	0	5
			7	6	9
THIRD QUARTER					
EDP	105	Introduction to Scientific Programming (FORTRAN)	2	3	3
EDP	107.1	Introduction to S/370 (OS)	3	0	3
MAT	102	Alegbra and Trigonometry II	5	0	5
			10	3	11
FOURTH QUARTER					
EDP	107.2	Introduction to S/370 (OS)	0	2	1
EDP	110	Business Programming (COBOL)	3	2	4
BUS	110	Business Machines	1	4	3
			4	8	8
FIFTH QUARTER					
EDP	210	Advanced Cobol	2	3	3
EDP	211.1	Systems and Procedures (COBOL)	2	0	2
BUS	101	Introduction to Business	3	2	4
			7	5	9
SIXTH QUARTER					
EDP	211.2	Systems and Procedures (COBOL)	0	3	1
EDP	208	Business Programming (BAL)	3	2	4
MAT	112	Mathematics of Finance	3	2	4
			6	7	9

SEVENTH QUARTER

EDP	209	Systems and Procedures (BAL)	2	3	3
ENG	100	Reading Comprehension	1	2	2
PSY	206	Psychology	3	0	3
			6	5	8

EIGHTH QUARTER

EDP	205	Scientific Programming (FORTRAN IV)	3	2	4
EDP	206.1	Systems and Procedures (FORTRAN IV)	2	0	2
MAT	214	Statistics	5	0	5
			10	2	11

NINTH QUARTER

EDP	206.2	Systems and Procedures (FORTRAN IV)	0	3	1
EDP	201	Business Programming (RPG)	3	2	4
BUS	120	Accounting	5	2	6
			8	7	11

TENTH QUARTER

EDP	202	Systems and Procedures (RPG)	2	3	3
EDP	212.1	Systems Analysis and Design	2	0	2
BUS	121	Accounting	5	2	6
			9	5	11

ELEVENTH QUARTER

EDP	212.2	Systems Analysis and Design	0	3	1
EDP	213	Advanced Projects	2	3	3
ENG	101	Fundamentals of English	3	0	3
ECO	102	Economics	3	0	3
			8	6	10

TWELFTH QUARTER

BUS	225	Cost Accounting	5	0	5
ENG	102	Composition	3	0	3
BUS	115	Business Law	3	0	3
			11	0	11

THIRTEENTH QUARTER

SOC	201	Social Science	3	0	3
ENG	103	Report Writing	3	0	3
ENG	204	Oral Communications	3	0	3
			9	0	9

CIVIL ENGINEERING TECHNOLOGY

A. A. S. Degree

			Class	Lab	Credit
FIRST QUARTER					
CIV	101	Surveying	2	6	4
MAT	100	Basic Mathematics	5	0	5
			7	6	9
SECOND QUARTER					
DFT	101	Drafting	1	5	3
MAT	101	Algebra and Trigonometry I	5	0	5
			6	5	8
THIRD QUARTER					
DFT	104	Civil Drafting	1	5	3
MAT	102	Algebra and Trigonometry II	5	0	5
			6	5	8
FOURTH QUARTER					
CIV	102	Surveying	2	6	4
ENG	101	Fundamentals of English	3	0	3
			5	6	7
FIFTH QUARTER					
CIV	103	Surveying	2	6	4
ENG	102	Composition	3	0	3
PSY	206	Psychology	3	0	3
			8	6	10
SIXTH QUARTER					
CIV	228	Engineering Relations and Ethics	2	0	2
MAT	103	Analytical Geometry & Calculus I	5	0	5
ENG	103	Report Writing	3	0	3
			10	0	10
SEVENTH QUARTER					
ECO	105	Economics	5	0	5
ENG	204	Oral Communications	3	0	3
SOC	201	Sociology	3	0	3
			11	0	11

EIGHTH QUARTER

CIV	204	Surveying	2	6	4
EDP	100	Introduction to Data Processing	3	2	4
			5	8	8

NINTH QUARTER

CIV	217	Construction Methods and Equipment	3	2	4
CIV	201	Properties of Engineering Materials	2	2	3
			5	4	7

TENTH QUARTER

CIV	114	Statics	5	0	5
CIV	229	Branches of Civil Engineering Technology	3	0	3
			8	0	8

ELEVENTH QUARTER

CIV	218	Plain and Reinforced Concrete	4	4	6
PHY	101	Properties of Matter	3	2	4
			7	6	10

TWELFTH QUARTER

CIV	220	Construction Planning	2	3	3
PHY	102	Mechanics	3	2	4
			5	5	7

THIRTEENTH QUARTER

CIV	216	Strength of Materials	5	0	5
CIV	202	Properties of Soils	2	3	3
			7	3	8

FOURTEENTH QUARTER

CIV	227	Construction of Highways	3	2	4
CIV	219	Steel and Timber Construction	3	2	4
			6	4	8

FIFTEENTH QUARTER

CIV	225	Estimates, Codes and Specifications	3	6	5
PHY	103	Electricity	3	2	4
			6	8	9

DRAFTING AND DESIGN TECHNOLOGY

A. A. S. Degree

FIRST QUARTER			Class	Lab	Credit
DFT	101	Drafting	1	5	3
MAT	100	Basic Mathematics	5	0	5
			6	5	8
SECOND QUARTER					
DFT	102	Drafting	1	5	3
MAT	101	Algebra and Trigonometry I	5	0	5
			6	5	8
THIRD QUARTER					
DFT	103	Drafting	1	5	3
MAT	102	Algebra and Trigonometry II	5	0	5
			6	5	8
FOURTH QUARTER					
DFT	204	Descriptive Geometry	2	6	4
PHY	101	Properties of Matter	3	2	4
			5	8	8
FIFTH QUARTER					
MEC	101	Machine Processes	0	6	2
PHY	102	Mechanics	3	2	4
			3	8	6
SIXTH QUARTER					
MEC	105	Statics	5	0	5
MEC	102	Machine Processes	0	6	2
			5	6	7
SEVENTH QUARTER					
MEC	210	Physical Metallurgy	3	3	4
MAT	103	Analytical Geometry and Calculus I	5	0	5
			8	3	9

EIGHTH QUARTER

DFT	201	Design Drafting	2	6	4
MEC	205	Strength of Materials	5	0	5
			7	6	9

NINTH QUARTER

DFT	205	Design Drafting	2	6	4
MEC	235	Hydraulics and Pneumatics	3	3	4
			5	9	8

TENTH QUARTER

PHY	103	Electricity	3	2	4
PSY	206	Psychology	3	0	3
ENG	101	Fundamentals of English	3	0	3
			9	2	10

ELEVENTH QUARTER

DFT	211	Mechanisms and Kinematics Design	2	6	4
ENG	102	Composition	3	0	3
ELC	201	Electrical Machinery	3	0	3
			8	6	10

TWELFTH QUARTER

DFT	212	Jig and Fixture Design	2	6	4
SOC	201	Sociology	3	0	3
			5	6	7

THIRTEENTH QUARTER

DFT	242	Architectural Drafting	2	6	4
ENG	103	Report Writing	3	0	3
ENG	204	Oral Communications	3	0	3
			8	6	10

FOURTEENTH QUARTER

DFT	206	Design Drafting	2	6	4
EDP	100	Introduction to Data Processing	3	2	4
			5	8	8

ELECTRONICS TECHNOLOGY

A. A. S. Degree

FIRST QUARTER			Class	Lab	Credit
ELN	101	Fundamentals of D. C.	4	4	6
MAT	100.1	Basic Mathematics	4	0	4
ENG	100	Reading Comprehension	1	2	2
			9	6	12
SECOND QUARTER					
ELN	102	Fundamentals of A.C.	4	4	6
MAT	100.2	Basic Mathematics	1	0	1
MAT	101.1	Algebra and Trigonometry I	3	0	3
ENG	101	Fundamentals of English	3	0	3
			11	4	13
THIRD QUARTER					
ELN	103	Network Analysis	4	4	6
MAT	101.2	Algebra and Trigonometry I	2	0	2
MAT	102.1	Algebra and Trigonometry II	2	0	2
ENG	102	Composition	3	0	3
			11	4	13
FOURTH QUARTER					
ELN	105	Vacuum Tubes, Theory and Application	4	4	6
MAT	102.2	Algebra and Trigonometry II	3	0	3
MAT	103.1	Analytical Geometry and Calculus I	1	0	1
SOC	201	Sociology	3	0	3
			11	4	13
FIFTH QUARTER					
ELN	106	Introduction to Solid State Devices	4	4	6
MAT	103.2	Analytical Geometry and Calculus I	4	0	4
PSY	206	Applied Psychology	3	0	3
			11	4	13

SIXTH QUARTER

ELN	207	Transistor Amplifier Analysis	4	4	6
MAT	201	(7 weeks) Calculus II	5	0	5
MAT	121	(4 weeks) Numbering Systems and Boolean Algebra	3	0	3
			12	4	14

SEVENTH QUARTER

ELN	217	Introduction to Special Devices	4	4	6
CHM	102	General Chemistry	2	3	4
			6	7	10

EIGHTH QUARTER

ELN	211	Logic Circuits	4	4	6
DFT	109	Electronic Drafting	1	5	3
			5	9	9

NINTH QUARTER

ELN	213	Waveshaping and Pulse Circuits	4	4	6
PHY	101	Properties of Matter	3	2	4
PHY	102.1	Mechanics	1	2	2
			8	8	12

TENTH QUARTER

ELN	209	Circuit Analysis	4	4	6
PHY	102.2	Mechanics	2	0	2
PHY	104	Light and Sound	3	2	4
			9	6	12

ELEVENTH QUARTER

ELN	219	Industrial Instrumentation	4	4	6
EDP	100	Introduction to Data Processing	3	2	4
			7	6	10

TWELFTH QUARTER

ELN	221	Electronic Circuit Design	4	4	6
ENG	103	Report Writing	3	0	3
ENG	204	Oral Communications	3	0	3
			10	4	12

MECHANICAL ENGINEERING TECHNOLOGY

A. A. S. Degree

FIRST QUARTER			Class	Lab	Credit
DFT	101	Drafting	1	5	3
MAT	100	Basic Mathematics	5	0	5
			6	5	8

SECOND QUARTER					
DFT	102	Drafting	1	5	3
MAT	101	Algebra and Trigonometry I	5	0	5
			6	5	8

THIRD QUARTER					
MEC	111	Manufacturing Processes	3	3	4
MAT	102	Algebra and Trigonometry II	5	0	5
			8	3	9

FOURTH QUARTER					
MEC	112	Manufacturing Processes	3	3	4
PHY	101	Properties of Matter	3	2	4
			6	5	8

FIFTH QUARTER					
CHM	102	General Chemistry	2	3	4
PHY	102	Mechanics	3	2	4
			5	5	8

SIXTH QUARTER					
MEC	105	Statics	5	0	5
PHY	103	Electricity	3	2	4
			8	2	9

SEVENTH QUARTER					
MEC	210	Physical Metallurgy	3	3	4
MAT	103	Analytical Geometry & Calculus I	5	0	5
			8	3	9

EIGHTH QUARTER

MEC	205	Strength of Materials	5	0	5
MAT	201	Calculus II	5	0	5
			10	0	10

NINTH QUARTER

MEC	235	Hydraulics and Pneumatics	3	3	4
MEC	212	Practical Automation	3	2	4
			6	5	8

TENTH QUARTER

ELC	205	Applied Electricity	2	4	4
ENG	101	Fundamentals of English	3	0	3
PSY	206	Psychology	3	0	3
			8	4	10

ELEVENTH QUARTER

MEC	206	Dynamics	3	0	3
ENG	102	Composition	3	0	3
EDP	100	Introduction to Data Process.	3	2	4
			9	2	10

TWELFTH QUARTER

MEC	208	Machine Design	4	0	4
ENG	103	Report Writing	3	0	3
SOC	201	Sociology	3	0	3
ISC	102	Industrial Safety	3	0	3
			13	0	13

THIRTEENTH QUARTER

MEC	209	Machine Design	4	0	4
ENG	204	Oral Communications	3	0	3
BUS	101	Introduction to Business	3	2	4
			10	2	11

FOURTEENTH QUARTER

MEC	220	Power Systems	3	0	3
Elective			..	..	5
		UP TO:	7	4	8

AIR CONDITIONING AND REFRIGERATION

State Diploma

FIRST QUARTER			Class	Lab	Credit
AHR	1121.1	Fundamentals of Refrigeration: Domestic	3	4½	4
MAT	1101.1	Fundamentals of Mathematics	4	0	4
ELC	1117	Basic Electricity	3	0	3
			10	4½	11

SECOND QUARTER					
AHR	1121.2	Fundamentals of Refrigeration: Domestic	0	7½	3
MAT	1101.2	Fundamentals of Mathematics	1	0	1
MAT	1103	Geometry	4	0	4
BPR	1104	Blueprint Reading: Mechanical	0	3	1
			5	10½	9

THIRD QUARTER					
AHR	1122.1	Fundamentals of Refrigeration: Commercial	3	4½	4
ELC	1118.1	Applied Electricity	2	2	3
ENG	1101	Reading Improvement	2	0	2
			7	6½	9

FOURTH QUARTER					
AHR	1122.2	Fundamentals of Refrigeration: Commercial	0	7½	3
WLD	1101	Basic Welding	1	2	2
ENG	1102	Communication Skills	3	0	3
			4	9½	8

FIFTH QUARTER					
AHR	1123.1	Principles of Air Conditioning	3	4½	4
BPR	1116	Blueprint Reading: Air Conditioning	1	3	2
PSY	1101	Human Relations	3	0	3
			7	7½	9

SIXTH QUARTER

AHR	1123.2	Principles of Air Conditioning	1	4½	3
AHR	1124.1	Principles of Heating: Fuels & Burners	2	0	2
PHY	1101	Applied Science	3	2	4
ELC	1118.2	Applied Electricity	1	0	1
			7	6½	10

SEVENTH QUARTER

AHR	1124.2	Principles of Heating: Fuels & Burners	1	6	3
AHR	1127.1	Duct Construction and Maintenance	2	3	3
BUS	1103	Small Business Operations	3	0	3
			6	9	9

EIGHTH QUARTER

AHR	1126	All Year Comfort Systems and A. C. Servicing	4	9	7
AHR	1127.2	Duct Construction and Maintenance	1	3	2
			5	12	9

AUTOMOTIVE MECHANICS

State Diploma

FIRST QUARTER			Class	Lab	Credit
AUT	1101.1	Internal Combustion Engines	2	5½	4
BPR	1101	Blueprint Reading: Power Mechanics	0	3	1
ENG	1101	Reading Improvement	2	0	2
			4	8½	7

SECOND QUARTER					
AUT	1101.2	Internal Combustion Engines	1	6½	3
MAT	1101.1	Fundamentals of Mathematics	3	0	3
ENG	1102	Communication Skills	3	0	3
			7	6½	9

THIRD QUARTER					
AUT	1102.1	Engine Electrical and Fuel Systems	3	5	5
MAT	1101.2	Fundamentals of Mathematics	2	0	2
PHY	1101.1	Applied Science	2	2	3
			7	7	10

FOURTH QUARTER					
AUT	1102.2	Engine Electrical and Fuel Systems	2	7	4
PHY	1101.2	Applied Science	1	0	1
PHY	1102.1	Applied Science	2	0	2
PSY	1101	Human Relations	3	0	3
			8	7	10

FIFTH QUARTER					
AUT	1123	Automotive Chassis & Suspension System	3	9	6
PHY	1102.2	Applied Science	1	2	2
			4	11	8

SIXTH QUARTER

AUT	1121	Braking Systems	2	3	3
BUS	1103	Small Business Operations	3	0	3
WLD	1101	Basic Welding	1	2	2
			6	5	8

SEVENTH QUARTER

AUT	1124	Automotive Power Train Systems	2	8	5
AHR	1110	Automotive Air Conditioning	2	3	3
			4	11	8

EIGHTH QUARTER

AUT	1125	Automotive Servicing	3	9	6
			3	9	6

BUILDING CONSTRUCTION

State Diploma
(Even Years)

			Class	Lab	Credit
FIRST QUARTER					
CAR	1102.1	Cabinetmaking I	4	8	7
BPR	1107	Blueprint Reading-Construction Trades	0	3	1
			4	11	8
SECOND QUARTER					
CAR	1102.2	Cabinetmaking I	1	7	3
ENG	1101	Reading Improvement	2	0	2
PSY	1101	Human Relations	3	0	3
			6	7	8
THIRD QUARTER					
CAR	1104	Cabinetmaking II	0	15	5
ENG	1102	Communication Skills	3	0	3
			3	15	8
FOURTH QUARTER					
CAR	1106	Cabinetmaking III	0	15	5
BUS	1103	Small Business Operations	3	0	3
			3	15	8
FIFTH QUARTER					
CAR	1101.1	Carpentry I	3	9	6
MAT	1101.1	Fundamentals of Mathematics	4	0	4
			7	9	10
SIXTH QUARTER					
CAR	1101.2	Carpentry I	2	6	4
BPR	1109	Blueprint Reading-Construction Trades	0	3	1
MAT	1101.2	Fundamentals of Mathematics	1	0	1
MAT	1103	Geometry	4	0	4
			7	9	10
SEVENTH QUARTER					
CAR	1103	Carpentry II	0	15	5
DFT	1127	Construction Trades Drafting I	2	5	3
			1	20	8
EIGHTH QUARTER					
CAR	1105	Carpentry III	0	15	5
DFT	1128	Construction Trades Drafting II	0	3	1
			0	18	6

BUILDING CONSTRUCTION

State Diploma

(Odd Years)

			Class	Lab	Credit
FIRST QUARTER					
CAR	1101.1	Carpentry I	3	9	6
BPR	1107	Blueprint Reading-Construction Trades	0	3	1
MAT	1101.1	Fundamentals of Mathematics	4	0	4
			7	12	11
SECOND QUARTER					
CAR	1101.2	Carpentry I	2	6	4
MAT	1101.2	Fundamentals of Mathematics	1	0	1
MAT	1103	Geometry	4	0	4
BPR	1109	Blueprint Reading-Construction Trades	0	3	1
			7	9	10
THIRD QUARTER					
CAR	1103	Carpentry II	0	15	5
DFT	1127	Construction Trades Drafting I	1	5	3
			1	20	8
FOURTH QUARTER					
CAR	1105	Carpentry III	0	15	5
DFT	1128	Construction Trades Drafting II	0	3	1
			0	18	6
FIFTH QUARTER					
CAR	1102.1	Cabinetmaking I	4	8	7
			4	8	7
SIXTH QUARTER					
CAR	1102.2	Cabinetmaking I	1	7	3
ENG	1101	Reading Improvement	2	0	2
PSY	1101	Human Relations	3	0	3
			6	7	8
SEVENTH QUARTER					
CAR	1104	Cabinetmaking II	0	15	5
ENG	1102	Communication Skills	3	0	3
			3	15	8
EIGHTH QUARTER					
CAR	1106	Cabinetmaking III	0	15	5
BUS	1103	Small Business Operations	3	0	3
			3	15	8

MACHINE SHOP

State Diploma

FIRST QUARTER			Class	Lab	Credit
MES	1101.1	Machine Shop	2	5½	4
MAT	1101.1	Fundamentals of Mathematics	4	0	4
BPR	1104	Blueprint Reading: Mechanical	0	3	1
			6	8½	9

SECOND QUARTER					
MES	1101.2	Machine Shop	1	6½	3
MAT	1101.2	Fundamentals of Mathematics	1	0	1
MAT	1103.1	Geometry	3	0	3
BPR	1105	Blueprint Reading: Mechanical	0	3	1
			5	9½	8

THIRD QUARTER					
MES	1102.1	Machine Shop	2	5½	4
MAT	1103.2	Geometry	1	0	1
MAT	1104	Trigonometry	3	0	3
BPR	1106	Blueprint Reading: Mechanical	0	3	1
			6	8½	9

FOURTH QUARTER					
MES	1102.2	Machine Shop	1	6½	3
PSY	1101	Human Relations	3	0	3
ENG	1101	Reading Improvement	2	0	2
			6	6½	8

FIFTH QUARTER					
MES	1103.1	Machine Shop	2	5½	4
PHY	1101	Applied Science	3	2	4
ENG	1102	Communication Skills	3	0	3
			8	7½	11

SIXTH QUARTER

MES	1103.2	Machine Shop	1	6½	3
PHY	1102	Applied Science	3	2	4
BUS	1103	Small Business Operations	3	0	3
			7	8½	10

SEVENTH QUARTER

MES	1104.1	Machine Shop	4	4	5
MES	1115	Treatment of Ferrous Metals	1	3	2
WLD	1101	Basic Welding	1	2	2
			6	9	9

EIGHTH QUARTER

MES	1104.2	Machine Shop	1	8	4
MAT	1123	Machinist Mathematics	3	0	3
MES	1116	Treatment of Non-Ferrous Metals	1	2	2
			5	10	9

TOOL AND DIE MAKING

Associate of Tool and Die-Technical Diploma

			Class	Lab	Credit
FIRST QUARTER					
TDM	1201.1	Machine Processes	2	5½	4
MAT	1203	Trigonometry	5	0	5
			7	5½	9
SECOND QUARTER					
TDM	1201.1	Machine Processes	1	6½	3
MAT	1204	Compound Angles and Curves	5	0	5
			6	6½	8
THIRD QUARTER					
TDM	1202.1	Machine Processes	2	5½	4
DFT	1207	General Machine Drafting	1	5	3
			3	10½	7
FOURTH QUARTER					
TDM	1202.2	Machine Processes	1	6½	3
MEC	1205	Strength of Materials	5	0	5
BPR	1208	Blueprint Reading: Tool & Die	2	3	3
			8	9½	11
FIFTH QUARTER					
TDM	1204.1	Machine Processes	2	5½	4
ELC	1201	Electricity — Industrial	2	3	3
MEC	1209	Hydraulics and Pneumatics	3	0	3
			7	8½	10
SIXTH QUARTER					
TDM	1204.2	Machine Processes	1	6½	3
TDM	1203	Metallurgy	3	0	3
			4	6½	6
SEVENTH QUARTER					
TDM	1206.1	Machine Processes	2	5½	4
TDM	1207	Special Problems and Molding	3	4	5
			5	9½	9
EIGHTH QUARTER					
TDM	1206.2	Machine Processes	1	6½	3
DFT	1209	Tool Design and Planning	2	3	3
			3	9½	6

WELDING

State Diploma

			Class	Lab	Credit
FIRST QUARTER					
WLD	1120	Oxyacetylene Welding and Cutting	3	12	7
			3	12	7
SECOND QUARTER					
WLD	1121	Arc Welding	3	12	7
			3	12	7
THIRD QUARTER					
WLD	1123	Inert Gas Welding	1	3	2
WLD	1122	Commercial and Industrial Practices	3	9	6
			4	12	8
FOURTH QUARTER					
WLD	1112	Mechanical Testing and Inspection	1	3	2
WLD	1124.1	Pipe Welding	2	5½	4
MES	1124	Metallurgy	2	1	3
			5	9½	9
FIFTH QUARTER					
WLD	1124.2	Pipe Welding	1	6½	3
WLD	1125	Certification Practices	3	6	5
			4	12½	8
SIXTH QUARTER					
BPR	1104	Blueprint Reading: Mechanical	0	3	1
ENG	1101	Reading Improvement	2	0	2
MAT	1101.1	Fundamentals of Mathematics	4	0	4
PSY	1101	Human Relations	3	0	3
			9	3	10
SEVENTH QUARTER					
BPR	1117	Blueprint Reading: Welding	0	3	1
ENG	1102	Communications Skills	3	0	3
MAT	1101.2	Fundamentals of Mathematics	1	0	1
MAT	1103	Geometry	4	0	4
BUS	1103	Small Business Operation	3	0	3
			11	3	12
EIGHTH QUARTER					
DFT	1126	Pattern Development and Layout	0	3	1
MES	1112	Machine Shop Processes	0	5	2
ELC	1118	Applied Electricity	3	2	4
			3	10	7

COURSE DESCRIPTIONS

TECHNICAL EDUCATION

BUS-101 Introduction to Business (3 - 2 - 4)

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization, and management. Prerequisite: None.

BUS-110 Business Machines (1 - 4 - 3)

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, and calculator. Prerequisite: None.

BUS-115 Business Law (3 - 0 - 3)

A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments and agencies. The uniform commercial code is considered wherever applicable. Prerequisite: None.

BUS-116 Business Law (3 - 0 - 3)

Includes the study of laws pertaining to bailments; insurance; agency; employer and employee relations; business organization; real property; and workers benefits. Prerequisite: BUS 115.

BUS-120 Accounting (5 - 2 - 6)

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting. Collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned. Prerequisite: MAT 110 or MAT 101 (D. P.).

BUS-121 Accounting (5 - 2 - 6)

Partnership and corporation accounting including a study of payrolls, federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: BUS 120.

BUS-122 Accounting (5 - 2 - 6)

The student is given a thorough knowledge of concepts used in the preparation and interpretation of financial statements. Each item of the income statement and balance sheet is carefully analyzed prior to making a selection as to how these items will be utilized. Prerequisite: BUS 121.

BUS-123 Finance (5 - 0 - 5)

Stock market transactions and brokerage operations are used as a vehicle in presenting this course. Financing of business units includes individuals, partnerships, corporations, and trusts. Sources and uses of capital are covered. Prerequisite: BUS 101.

BUS-124 Finance (3 - 2 - 4)

Financing, federal, state, and local government and the ensuring effects upon the economy. Factors affecting supply of funds, monetary and credit policies. Prerequisite: BUS 123.

BUS-219 Credit (5 - 0 - 5)

Principles and practices in the extension of credit; collection procedures; laws pertaining to credit extension and collection are included. Prerequisite: BUS 120.

BUS-224 Introduction to Basic Cost Principles (3 - 0 - 3)

Methods employed by companies in accumulating cost data and their uses by management for control and standard cost procedures in budget preparation. Prerequisite: BUS 121.

BUS-225 Cost Accounting (5 - 0 - 5)

Nature and purpose of cost accounting; accounting for direct labor, materials, and factory burden; job cost, and standard cost principles and procedures; selling and distribution cost; budgets, and executive use of cost figures. Prerequisite: BUS 121.

BUS-229 Taxes (3 - 2 - 4)

Application of federal and state taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales and use, excise, and inheritance. Prerequisite: BUS 121 or HRM 105.

BUS-233 Personnel Management and Supervision (5 - 0 - 5)

This course presents the fundamental principles and successful practices in the organization and supervision of employees. A study of the critically important and practical concepts of modern day supervision is presented. Results of modern social-psychological research and case studies are employed to demonstrate and emphasize leadership and motivation in the job situation. Prerequisite: PSY 206.

BUS-235 Business Organization & Management (3 - 2 - 4)

Principles of business organization, administration, and management covering management theory including planning, staffing, controlling, coordinating, directing, financing, and budgeting. An overview of developing and engineering the product, methods analysis and control, principles and administration of industrial relations and financing controls as interrelated functions of management are stressed. Prerequisite: BUS 101.

BUS-239 Introduction to Marketing (5 - 0 - 5)

A general survey of the field of marketing, with a detailed study of the function, policies, and institutions involved in the marketing process. Prerequisite: None.

BUS-247 Insurance (5 - 0 - 5)

A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included. Prerequisite: BUS 116 or HRM 102.

BUS-258 Machine Accounting (1 - 1 - 1)

Designed to provide a reasonable skill in the use of office machines. Each student shall develop a fair degree of efficiency in the basic operations of each machine through the application of procedures learned to actual problem solving in the accounting field. Prerequisite: BUS 121.

BUS-269 Auditing (3 - 2 - 4)

Principles of conducting audits, both internal and external, with special emphasis on the control and safeguarding of assets and properly recording liabilities. Prerequisite: BUS 122 and BUS 225.

BUS-270 Managerial Decisions (3 - 2 - 4)

Interpreting accounting data for managerial decisions. Stress is placed on the need for relevant, accurate records to ensure internal control. Procedures, standards, and preparing, projection, and operation of business budgets are introduced. Prerequisite: BUS 224 or BUS 225.

CHM-090 Fundamental Chemistry (3 - 3 - 4)

An introduction to basic chemistry which is essential for understanding organic and biological chemistry. Laboratory work emphasizes these basic concepts. Mathematical computations are limited to those necessary for understanding laboratory reports and developing a concept of the quantitative nature of chemistry. Prerequisite: None.

CHM-102 General Chemistry (2 - 3 - 4)

This course involves a study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, bases, salts, solvents, solutions, and emulsions. In addition, a study is made of electro-chemistry, electrolytes and electrolysis in their application of chemistry to industry. Prerequisite: MAT 101.

CIV-101 Surveying (2 - 6 - 4)

Theory and practice of plane surveying, including taping, differential and profile leveling, cross sections, earthwork computations, transit, stadia and transit-tape surveys. Corequisite: MAT 100.

CIV-102 Surveying (2 - 6 - 4)

Triangulation of ordinary precision; use of plane table; calculation of areas of land; land surveying; topographic surveys and mapping. Prerequisite: CIV 101. Corequisite: MAT 102.

CIV-103 Surveying (2 - 6 - 4)

Route surveys by ground and aerial methods; simple, compound, reverse, parabolic and spiral curves; geometric design of highways; highway surveys and plans, including mass diagrams. Prerequisite: CIV 102. Corequisite: MAT 103.

CIV-114 Statics (5 - 0 - 5)

Forces, resultants, and types of force systems; moments, equilibrium of coplanar forces by analytical and graphic methods; stresses and reactions in simple structure; equilibrium of forces in space; static and kinetic friction; center of gravity, centroids and moment of inertia. Corequisite: MAT 102.

CIV-201 Properties of Engineering Materials (2 - 2 - 3)

Study and testing of the properties of ferrous and nonferrous metals, timber, stone, clay products, bituminous cementing materials; load and strain measurements; behavior of materials under load; qualities other than strength; control of the properties of the materials; non-destructive tests. Corequisite: PHY 101.

CIV-202 Properties of Soils (2 - 3 - 3)

Study of soil types and their physical properties; mechanical analysis and tests of soils; techniques and subsurface investigation; earth pressure theories; bearing capacity; stability of slopes; hydrostatics of ground water; methods of compaction and consolidation. Prerequisite: CIV 216.

CIV-204 Surveying (2 - 6 - 4)

Aerial photogrammetry; applications of aerial surveys; building and road construction surveying; lines and grades for foundation layout, building construction, bridge layout, sewer and pipe line surveys, further study and application of advanced surveying techniques and instruments. Prerequisite: CIV 103.

CIV-216 Strength of Materials (5 - 0 - 5)

Fundamental stress and strain relationship; torsion; shear and bending moments; stresses and deflections in beams; introduction to statically indeterminate beams; columns; combined stresses. Prerequisite: CIV 114.

CIV-217 Construction Methods and Equipment (3 - 2 - 4)

Excavating methods and equipment used in building and highway construction; pile driving, construction techniques and equipment used in reinforced concrete buildings, bridges, lift-slaps, thin-shells and folded plates, erection methods and equipment of structural steel buildings and bridges; carpentry in house and heavy timber construction; construction safety. Field inspection trips.

CIV-218 Plain and Reinforced Concrete (4 - 4 - 6)

Study and testing of the composition and properties of concrete including cementing agents, aggregates, admixtures, and air-entrainment; design and proportioning of concrete mixes to obtain pre-determined strengths and properties; methods of placing and curing concrete; standard control tests of concrete. Analysis and design of reinforced concrete beams, floor systems and columns. Use of CRSI Handbook. Principles of prestressed and precast concrete. Prerequisites: CIV 201, CIV 216.

CIV-219 Steel and Timber Construction (3 - 2 - 4)

Analysis and basic design of steel beams, tension members, columns, and riveted, high strength bolted, welded connections; study of plate girders, industrial building roofs and vents, continuous spans, lightweight steel construction; use of American Institute of Steel Construction Manual; introduction to rigid frames and plastic design in steel. Design of timber members and their connections. Field inspection trips. Prerequisite: CIV 216. Corequisite: CIV 225.

CIV-220 Construction Planning (2 - 3 - 3)

Analysis of construction plant layout requirements and contractor's organization for building and highway projects. Construction scheduling; project control and supervision; coordinating trades on building construction. Operations, charts, and practical application of Critical Path Method (CPM) for construction planning, scheduling, and "time-cost" determination. Prerequisite: CIV 217.

CIV-225 Estimates, Codes and Specifications (3 - 6 - 5)

Interpretation of working drawings of timber, steel, and reinforced concrete structures and highways; bidding procedures from preliminary survey to final bid; study of the North Carolina Building Code; and the Occupational Safety and Health Act (OSHA); practical costs and estimates problems; specifications. Prerequisite: CIV 217.

CIV-227 Construction of Highways (3 - 2 - 4)

Construction practices for road building, including soil properties, grading, base, subbase, drainage, cuts and fills. Design of intersections, study of traffic flow and surveys, timespace diagrams. Organizational structure of the national highway system. Field trips. Prerequisites: CIV 202, CIV 103.

CIV-228 Engineering Relations and Ethics (2 - 0 - 2)

Study of the Engineers' Codes. Brief coverage of other fields of engineering technology. Ethical relations with employer, employees, clients, other technicians. Class discussions of situations involving engineering law and ethics. Prerequisite: Senior status.

CIV-229 Branches of Civil Engineering Technology (3 - 0 - 3)

Study of hydraulics, dam design, traffic engineering, hydrology, water systems design and layout, sewage treatment. Field trips. Prerequisite: Senior status.

DFT-101 Drafting (1 - 5 - 3)

Introduction to field of drafting; lettering; use of instruments; geometric constructions; orthographic projection theory, sketching, reading, and instrument drawing; basic pictorial drawings; introduction of dimensions and notes; and reproduction process. Prerequisite: None.

DFT-102 Drafting (1 - 5 - 3)

Auxiliary views; sections and conventions; dimensioning and shop notes for detail drawings; introduction of working drawings; screw threads, fasteners, keys, and springs; and simple assembly drawings. Prerequisite: DFT 101.

DFT-103 Drafting (1 - 5 - 3)

The study of precision dimensioning; preparation of set of working drawings: assembly drawings, detail drawings, and parts lists; surface quality (finish); and weldments and symbols.

DFT-104 Civil Drafting (1 - 5 - 3)

Plats as required by law drawn in pencil and ink. Highway construction layouts and profiles, steel and wood structural drawings, topographical mapping and symbols. Prerequisite: DFT 101.

DFT-109 Electronic Drafting (1 - 5 - 3)

Use of instruments; lettering; reading, sketching and drawing orthographic views; electrical and electronic symbols; block diagrams; schematic diagrams and wiring diagrams. Prerequisite: None.

DFT-201 Design Drafting (2 - 6 - 4)

Structural steel layout and detailing; application of structural shapes; fluid distribution: selection of pipe, tubing and fittings, single line piping diagrams, and two line piping drawings; electronic and electrical symbols; and single line, schematic, and wiring diagrams. Emphasis will be placed on use of catalogs and manuals related to the above areas of study. Prerequisite: DFT 103.

DFT-204 Descriptive Geometry (2 - 6 - 4)

Points, edges, lines, planes, curved lines, curved surfaces, irregular surfaces, intersections, developments, auxiliary projections, revolutions, vectors, and practical design applications. Prerequisite: DFT 102.

DFT-205 Design Drafting (2 - 6 - 4)

Charts and graphs, plats as required by law; topographical mapping and symbols; and design layouts and working drawings of gears, gear train drives, belt and pulley drives, and chain and sprocket drives. Prerequisite: DFT 103.

DFT-206 Design Drafting (2 - 6 - 4)

Assignment of mechanical design projects requiring use of research; application of basic engineering principles; calculations; and use of various manuals, catalogs, and periodicals. Preliminary design sketches, layout drawings, detail drawings, sub-assembly drawings, assembly drawings, specifications, patent drawings and simplified drawing practices will be required. Prerequisite: DFT 205 and DFT 211.

DFT-211 Mechanisms and Kinematics Design (2 - 6 - 4)

Introduction and definitions of kinematic terms; vectors; motion concepts; kinematic drawing; kinematic displacement; centros; velocities and accelerations of mechanisms; motion curves; displacement diagrams and cam layout; and practical problems, gear trains, cams, belts and pulleys, and chains and sprockets. Prerequisites: DFT 204, DFT 205, and PHY 102.

DFT-212 Jig and Fixture Design (2 - 6 - 4)

Emphasis is placed on tool planning, design and drafting; commercial standards, principles and practices; selection of materials and standard parts; use of catalogs and manuals; and cost estimates. Projects are assigned requiring the design of jigs, fixtures, and gauges. Prerequisite: DFT 205.

DFT-242 Architectural Drafting (2 - 6 - 4)

Complete set of working drawings, plot plan, floor plan, elevations, wall sections, details, electrical plan, plumbing, foundation, dimensioning practice, symbols and materials schedule. Prerequisite: DFT 103.

ECO-102 Economics (3 - 0 - 3)

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None.

ECO-104 Economics (3 - 0 - 3)

Greater depth in principles of economics including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems. Prerequisite: ECO 102.

ECO-105 Economics (5 - 0 - 5)

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, consumption, composition, and pricing of national output, distribution of income, international trade and finance, and current economic problems. Prerequisite: None.

ECO-106 Labor Economics (3 - 0 - 3)

Current labor problems and theories; the labor market; the development of labor unions; wage theories and the development of effective labor and wage policies. Prerequisite: ECO 104.

EDP-100 Introduction to Data Processing (3 - 2 - 4)

Fundamental concepts and operational principles of data processing systems, along with an introduction to computer programming, are presented for non-data processing majors. The emphasis is on business applications for students from the School of Business Education and on mathematical and technical applications for students from the School of Engineering Technology. Prerequisite: None.

EDP-101 Functional Wiring Principles (2 - 3 - 3)

Basic principles of control panel wiring and operation of punched card equipment are emphasized in this course. Laboratory projects based on business applications give key punch, sorter, accounting machine, reproducer, and collator experience to the student. Prerequisite: None.

EDP-102 Introduction to Computer Technology (2 - 3 - 3)

Fundamental concepts of data processing and systems analysis including computers, data processing systems, input/output devices, and flowcharting are presented. Machine language is introduced by using the 1620 computer to perform basic computations. The programs emphasize programming techniques including branches, loops, and address modification. Corequisite: EDP 101.

EDP-104 Business Programming (SPS) (2 - 3 - 3)

The Symbolic Programming Systems (SPS) is the first assembler level language in which the students write programs. Various business applications, including a major payroll project, are flowcharted, programmed, processed on the 1620 computer, and debugged by the student. Prerequisite: EDP 102.

EDP-105 Introduction to Scientific Programming (FORTRAN) (2 - 3 - 3)

Formula Translation (FORTRAN) programming stresses the solution of practical problems of a mathematical nature from business and industry. The course includes programming in basic FORTRAN II, compiled and run on the 1620 computer. Prerequisite: EDP 102.

EDP-107 Introduction to System/370 (OS) (3 - 2 - 4)

This course provides specific information about the System/370 computer. The course shows how it computes, how it is programmed, and what makes up such a computer system. Disk operating system is also introduced in this course. Prerequisite: EDP 102.

EDP-110 Business Programming (COBOL) (3 - 2 - 4)

The Common Business Oriented Language (COBOL) is presented in detail. A variety of business and commercial applications are programmed and then tested. Prerequisite: EDP 107.

EDP-201 Business Programming (RPG) (3 - 2 - 4)

Report Program Generator (RPG) coding includes preparation of the spacing chart, file description, file extension, input, calculation, and output specifications. Business application programs are written. Prerequisite: EDP 102.

EDP-202 Systems and Procedures (RPG) (2 - 3 - 3)

This course gives the student additional explanation on systems and procedures as they relate to the Report Program Generator coding system. Corequisite: EDP 201.

EDP-205 Scientific Programming (FORTRAN IV) (3 - 2 - 4)

FORTRAN IV is introduced as an extension of the FORTRAN II course. Prerequisites EDP 105, MAT 104, MAT 214.

EDP-206 Systems and Procedures (FORTRAN IV) (2 - 3 - 3)

Emphasis is on the solution of practical problems of a mathematical nature from business and industry. Corequisite: EDP 205.

EDP-208 Business Programming (BAL) (3 - 2 - 4)

The Basic Assembler Language (BAL) programming course includes details for writing programs to function under the Operating System (OS) of System/370. Specific information pertaining to OS is presented. Prerequisite: EDP 107.

EDP-209 Systems and Procedures (BAL) (2 - 3 - 3)

Programming projects are assigned to students to be written and run on the System/370 in Basic Assembler Language. The projects include typical procedures and applications found in industries. Corequisite: EDP 208.

EDP-210 Business Programming (Advanced COBOL) (2 - 3 - 3)

This course is an extension of basic COBOL. It allows needed time for understanding and writing more sophisticated programs under OS. Prerequisite: EDP 110.

EDP-211 Systems and Procedures (COBOL) (2 - 3 - 3)

This course covers studies of typical COBOL systems and procedures now being used in commercial and industrial computer installations. The student is given information on organization of data for computer application. Major applications are followed up with projects performed by the student. Corequisite: EDP 210.

EDP-212 Systems Analysis and Design (2 - 3 - 3)

In this course, the student is assigned to study an existing data processing system and make recommendations for improvement, or to design a new system. The work is in the nature of a programmer-analyst. The task will involve the flow of work from its point of origin to completion by the computer program including all forms design, full documentation and reports. Prerequisites: EDP 206, EDP 211.

EDP-213 Advanced Projects (2 - 3 - 3)

This course is designed to provide the student with experience in applying the various computer languages and concepts in advanced problem solving. Included will be the use of disk, library programs, and job control language as needed for the projects. Prerequisites: EDP 206, EDP 211.

ELC-201 Electrical Machinery (3 - 0 - 3)

A course in basic understanding and application of electricity to modern industrial machinery. Included is a study of D.C. and A.C. motors, motor controls and protecting devices, transformers, and their industrial applications. Prerequisite: PHY 103.

ELC-205 Applied Electricity (2 - 4 - 4)

Electrical code, interpretation of nameplate data, motor characteristics and selection, motor controls and protection devices, single phase and three-phase current applications, wire size calculations and Y and Delta connections. Prerequisite: PHY 103.

ELN-101 Fundamentals of D-C (4 - 4 - 6)

Principles of direct current electricity including: basic electron physics; electrical units of measure; Ohm's law; series, parallel, and series-parallel resistive networks; Kirchoff's laws; basic measuring instruments; electrostatics; capacitors; R-C time constants; magnetics; inductance; L-R time constants. Laboratory experiments provide proof of the important concepts developed. Prerequisite: None.

ELN-102 Fundamentals of A-C (4 - 4 - 6)

Principles of alternating current electricity including: sine wave analysis; resistive, capacitive, and inductive networks; phasor relations in complex circuits; non-resonant and resonant series and parallel L-C-R circuits; inductive coupling; air and iron core transformer analysis. Important theoretical concepts are substantiated by laboratory experiments. Prerequisite: ELN 101.

ELN-103 Network Analysis (4 - 4 - 6)

Application of the Network Theorems to problem solution. Kirchoff's Voltage and Current Laws, the Superposition Theorem, Thevenin's Theorem, Norton's Theorem and Miller's Theorem are applied to different circuit configurations in order to develop skills necessary to analyze circuit performance mathematically. Emphasis is concentrated on facilitating circuit solution by replacing complex networks with simple equivalent circuits. Prerequisite: ELN 102.

ELN-105 Vacuum Tubes, Theory and Application (4 - 4 - 6)

An introductory study of the vacuum tube as an active circuit element with both graphical and linear analysis of the device and circuits. A basic examination of the linear amplifier is combined with some applications in feedback and oscillators. Prerequisite: ELN 102, ELN 103.

ELN-106 Introduction to Solid State Devices (4 - 4 - 6)

A brief introduction to semiconductor theory, followed by a D-C analysis of the PN junction, semiconductor diodes (conventional and Zener) and bipolar transistors. Graphical analysis is employed for introductory purposes but course emphasis is directed toward circuit solution utilizing hybrid parameters. Transistor biasing is considered in conjunction with device limits and thermal effects. Prerequisite: ELN 103.

ELN-207 Transistor Amplifier Analysis (4 - 4 - 6)

Further development of the semiconductor studies of ELN 106. Alternating current circuit concepts are introduced. The transistor is studied as an amplifier in the common emitter, common collector and common base configurations. The push-pull amplifier is introduced. Field effect transistors are included as a separate study. Prerequisite: ELN 106.

ELN-209 Circuit Analysis (4 - 6 - 6)

A study of special purpose amplifiers and related components. Cascade amplifiers are studied from their non-ideal aspects. Operational amplifiers are studied as analog devices capable of performing mathematical operations. Input and output level and impedance matching of amplifiers is considered as well as additional related topics such as differential amplifiers and a further study of oscillators. Prerequisite: ELN 207.

ELN-211 Logic Circuits (4 - 4 - 6)

An introduction to solid state logic circuits. Topics of study are — OR gates, AND gates, inverters, inhibit operations, EXCLUSIVE OR gates, AND gates, NOR gates, binary addition and subtraction with logic circuit elements, registers encoding, decoding, and finally combining the circuits studied in suitable configurations to perform logic operations. Prerequisite: ELN 106, MAT 121.

ELN-213 Waveshaping and Pulse Circuits (4 - 4 - 6)

A course continuing studies initiated in ELN 211 and introducing additional topics. Logic circuits study is extended to include bistable multivibrator, monostable multivibrator, astable multivibrator and Schmitt trigger. Differentiators, integrators, ramp generators and related topics are included as well as additional studies of device limitations as applied to switching circuits. Prerequisite: ELN 211.

ELN-217 Introduction to Special Devices (4 - 4 - 6)

A study encompassing semiconductor devices with negative resistance characteristics or other special properties. Devices studied include unijunction transistors, four layer diodes (SCR, SCS, TRIAC, etc.), tunnel diodes, Shockley diodes and others. Prerequisite: ELN 209.

ELN-219 Industrial Instrumentation (4 - 4 - 6)

An investigation into sensing devices, information processing and discrimination, recorders, and output devices. These elements are considered in analog, and digital applications to industrial control and automation systems. Prerequisite: ELN 209, ELN 211.

ELN-221 Electronic Circuit Design (4 - 4 - 6)

A research project for the advanced student to provide a realistic and creative application of his fundamental electronic knowledge to a demonstrative system of his own design. A further objective in cooperation with the English department is to provide further experience in preparing meaningful technical reports. Prerequisite: ELN 209, ELN 211.

ENG-100 Reading Comprehension (1 - 2 - 2)

A concentrated effort designed to assist the student in increasing his power to comprehend and interpret written material. Emphasis is placed on reading to learn, and instruction is concerned fundamentally with the continued refinement and development of the abilities of each individual. Group training, practice sessions, discussions of difficulties, techniques and ideas are used to attain the maximum reading skills of every reader.

ENG-101 Fundamentals of English (3 - 0 - 3)

Designed to aid the student in achieving correct and effective self-expression. The emphasis is on improvement of written expression through the use of the functional approach. The course is intended to prepare the student for appropriate written and spoken communication in day-to-day situations in his work and in his social life. Prerequisite: None.

ENG-102 Composition (3 - 0 - 3)

Designed to aid student in further improvement of self-expression in business and technical composition. Emphasis is on the sentence, paragraph, and whole composition. Prerequisite: ENG 101.

ENG-103 Report Writing (3 - 0 - 3)

The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full length report is required of each student. This report is based on material in his chosen curriculum. Prerequisite: ENG 102.

ENG-204 Oral Communication (3 - 0 - 3)

A study of basic concepts and principles of oral communications to enable the student to communicate with others. Emphasis is placed on the speaker's

attitude, dictlon, voice, and the application of particular techniques to correct speaking habits and to produce effective oral presentation. Particular attention is given to conducting meetings, conferences, and interviews. Prerequisite: ENG 101.

ENG-206 Business Communication (3 - 0 - 3)

Develops skills in techniques in writing business communications. Emphasis is placed on writing action — sales letters and prospectuses, business reports, summaries of business conferences, letters involving credit, collections, adjustments, complaints, order acknowledgements, remittances, and inquiries. Prerequisite: ENG 102.

ENV-100 Man and His Environment (3 - 0 - 3)

A study of the "environmental crisis" including topics such as depletion of our nation's energy reserves; efforts to control pollution, and methods of population control. Solid waste disposal and recycling, sewage treatment, and industrial roles in the causes and controls of air, water, and thermal pollution are covered to the extent that the student will have a working knowledge of factors essential to man's environment. Prerequisite: None.

ENV-110 Man and Ecology (3 - 3 - 4)

A study of how man has influenced ecology and what he must do in order to insure his survival. Depletion of natural resources, rampant pollution, uncontrolled population are main topics. The student is involved in local ecological issues, in visits to local industry, and in making an "environmental scrapbook" to better understand how we are part of the problem and solution. Prerequisite: None.

ISC-102 Industrial Safety (3 - 0 - 3)

Problems of accidents and fire in industry. Management and supervisory responsibility for fire and accident prevention. Additional topics cover accident reports and the supervisor; good housekeeping and fire prevention; machine guarding and personnel protective equipment; state industrial accident code and fire regulations; the first aid department and the line of supervisory responsibility; job instruction and safety instruction; company rules and enforcement; use of safety committees; insurance carrier and the Insurance Rating Bureau; Occupational Safety and Health Act (OSHA); and advertising and promoting a good safety and fire prevention program. Prerequisite: None.

ISC-202 Quality Control (3 - 2 - 4)

Principles and techniques of quality control and cost saving. Organization and procedure for efficient quality control. Functions, responsibilities, structure, costs, reports, records, personnel and vendor-customer relationships in quality control. Sampling inspections, process control and tests for significance. Prerequisite: None.

ISC-203 Time and Motion Study (3 - 2 - 4)

Principles of motion economy, tools for motion study, time study methods and practice; standard data and formula construction; use of methods-time measurements as a substitute for time studies. Prerequisite: None.

ISC-204 Value Analysis (3 - 0 - 3)

The modern concept in the control of manufacturing production. This course will provide the students an opportunity to study a production system with the specific purpose of identifying unnecessary costs. The objective of the concepts and techniques of value analysis is to make possible a degree of effectiveness in identifying and removing unnecessary cost by the use of sound decisions through a common sense approach. Prerequisite: None.

ISC-209 Plant Layout (3 - 2 - 4)

A practical study of factory planning with emphasis on the most efficient arrangements of work areas to achieve lower manufacturing costs. Layouts for small and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment. Effective management of men, money and material in a manufacturing operation. Prerequisite: Consent of Faculty Advisor.

ISC-211 Work Measurement (3 - 2 - 4)

Principles of work simplification including administration of job methods improvement, motion study fundamentals and time study techniques. Use of flow and process charts; multiple activity charts, operation charts, flow diagrams and methods evaluation. Prerequisite: ISC 203.

ISC-251 Labor Problems and Labor Law (3 - 2 - 4)

A study of the current problems of Industrial societies. Labor requirements for new plants and expanding industries. Training problems in industry and laws that regulate these programs. A study of state and federal laws that regulate various classes of labor. An overview of reports that are made to government agencies, and services rendered to industry from various government agencies. Prerequisite: ECO 104.

MAT-090 Fundamental Mathematics (5 - 0 - 5)

A review of the basic concepts and operations of arithmetic, including fractions, decimals and percentages will be presented. Elementary algebra will be introduced. This course is designed for students with no previous experience in algebra. Prerequisite: None.

MAT-100 Basic Mathematics (5 - 0 - 5)

Introduction to mathematics including operations with numbers, fractions, per cent, dimensional analysis, signed numbers, elementary algebra, linear equations, basic plane and solid geometry with emphasis on applications. Prerequisite: entrance requirements.

MAT-101 Algebra and Trigonometry I (5 - 0 - 5)

Number systems of various bases are introduced. Fundamental algebra operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed. Prerequisite: MAT 100.

MAT-102 Algebra and Trigonometry II 5 - 0 - 5)

A continuation of MAT 101. Advanced algebraic and trigonometric topics include quadratics, logarithms, determinants, matrices, progressions, the binom-

inal expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions. Prerequisite: MAT 101.

MAT-103 Analytical Geometry and Calculus I (5 - 0 - 5)

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: MAT 102.

MAT-110 Business Mathematics I (5 - 0 - 5)

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: None.

MAT-111 Business Mathematics II (3 - 0 - 3)

This course is a continuation of MAT 110 with further study into the topics of payrolls, price marketing, interest. and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: MAT 110.

MAT-112 Mathematics of Finance (3 - 2 - 4)

The course consists of practical application of business financial transactions involving analysis of statements, interest. present value, yield, discount, compound interest, annuities, extinction of debt and depreciation. Use of modern calculating equipment will be employed. Prerequisites: MAT 101 or MAT 111 and BUS 110.

MAT-114 Basic Descriptive Statistics (3 - 2 - 4)

A course in descriptive statistics with emphasis on classification of variables, methods of collecting and presenting data, measures of central tendencies, and types of variables and an introduction to frequency distribution. Prerequisite: MAT 111.

MAT-121 Numbering Systems and Boolean Algebra (3 - 0 - 3)

It is a study of various numbering systems with emphasis on the binary, octal and hexadecimal as related to one another, the decimal system, and computers; conversions from one system to another; arithmetic operations in non-decimal systems; elementary logic; and Boolean Algebra. Prerequisite: None.

MAT-201 Calculus II (5 - 0 - 5)

A continuation of MAT 103. More advanced concepts of differentiation and integration are considered. Included are derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations. Prerequisite: MAT 103.

MAT-214 Statistics (5 - 0 - 5)

This is an introduction to statistics with emphasis on data analysis including frequency distributions, measures of location and variation, and probability. Practical problems support the theory. Prerequisite: MAT 101.

MEC-101 Machine Processes (0 - 6 - 2)

An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming. Prerequisite: None.

MEC-102 Machine Processes (0 - 6 - 2)

Advanced operations on lathe, drilling, boring and reaming machines. Milling machine theory and practice. Thorough study of the types of milling machines, cutters, jig and fixture devices, and the accessories used in a modern industrial plant. Safety in the operational shop is stressed. Prerequisite: MEC 101.

MEC-105 Statics (5 - 0 - 5)

Concepts and basic principles of statics. Parallel concurrent, and noncurrent force systems in coplanar and noncoplanar situations. Concepts of friction. Prerequisites: MAT 102, PHY 102.

MEC-111 Manufacturing Processes (3 - 3 - 4)

A survey of manufacturing processes, machines, and materials with regard to their capabilities, capacities, tolerances, finishes, etc. Product design, materials utilized, engineering nomenclature, and common terminology will be discussed. Laboratory to include field trips to various manufacturing industries, demonstration of machine operations. Prerequisite: None.

MEC-112 Manufacturing Processes (3 - 3 - 4)

Study of the characteristics of engineering materials and manufacturing processes. Process planning of operation sequences for efficient production. Tool planning and estimating. Operate lathe, drill, mill, and shaper.

MEC-205 Strength of Materials (5 - 0 - 5)

Study of the basic principles by which stresses and strains are induced in beams, members and structures by imposed loads. Analyses of stresses are made as applied to beams, columns, thin-walled cylinders, spheres, riveted and welded joints, and machine components.

MEC-206 Dynamics (3 - 0 - 3)

Study of change of position or motion as it affects machines and their mechanical components. The subjects of mathematical vectors and kinematics used for design of mechanisms and cams, etc., are introduced. Dynamics formulae are presented and explained. Work problems are provided. Prerequisites: MEC 105, MAT 201, and MEC 205.

MEC-208 Machine Design (4 - 0 - 4)

A survey course with the selection of components in mechanical design, such as power trains, gearing, bearings, shafts, keys, springs, belts, couplings, clutches, brakes, etc., through the use of design information, standards, handbooks, etc. Prerequisite: MEC 205.

MEC-209 Machine Design (4 - 0 - 4)

Study of factors affecting the design of machine elements. Empirical and theoretical equations, practical considerations, and procedures of designing are included. Students given practice in applying knowledge of strength and properties of materials, manufacturing processes, economics of production, safety, and elements of good design through problem assignments. Prerequisite: MEC 208.

MEC-210 Physical Metallurgy (3 - 3 - 4)

Introductory course in metallurgy, a basic study of the properties of metals and alloys. Analysis of the structure of metals and alloys. Atomic structure, and its effect on physical properties. Solid (crystalline) structures, methods, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Laboratory work to include useful field trips to local industries. Prerequisite: PHY 101, MAT 102.

MEC-212 Practical Automation (3 - 2 - 4)

A comprehensive study of automation as it is interpreted and practiced by American industry of today. The fundamentals of automation and its effects in industrial productivity, labor and demand, equipment and processes. Students will solve problems encountered with installing an automated system. Laboratory work to include useful field trips to local industries. Prerequisite: None.

MEC-215 Advanced Strength of Materials (3 - 0 - 3)

Precise design of machine components. Provides mathematically complete design methods for machine frame members, support systems, rotating or translating components. Covers indeterminate members and eccentrically loaded machine members. Prerequisites: MAT 103, MEC 205.

MEC-216 Advanced Dynamics (3 - 0 - 3)

Dynamics of a particle, dynamics of systems of particles and rigid bodies in plane motion. Application of these analytical methods to machine components will be emphasized. General motion of rigid bodies, particularly gyroscopic action as it applies to machine control equipment, will be introduced. Prerequisite: MEC 206.

MEC-220 Power Systems (3 - 0 - 3)

Survey of energy conversion systems such as the internal combustion engine, power plant, gas turbine, and refrigerator. Basic thermodynamic principles and laws introduced. Prerequisite: PHY 102, MAT 103.

MEC-222 Advanced Power Systems 3 - 0 - 3)

Thermodynamic principles reviewed and expanded. Theory is applied to evaluation of advanced thermodynamic engines, such as multi-stage turbines, turbine refrigeration, Stirling engines, Wankel or other rotary engines, free piston engines and compressors. Thermoelectric and thermionic power sources will be introduced. Prerequisites: MAT 103, MEC 220.

MEC-235 Hydraulics and Pneumatics (3 - 3 - 4)

The basic theories of hydrostatics and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors,

controls, electrohydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs. Laboratory work to include useful field trips to local industries. Prerequisite: PHY 102.

MEC-236 Advanced Hydraulics — Flow Systems (3 - 0 - 3)

Flow of fluids through valves, fittings and pipe is evaluated. The basic procedures common to design of chemical pilot plants, special plumbing systems, pilot refineries and pipeline networks will be emphasized. Methods applicable to design of engine fuel systems, gas ducting and exhaust systems are included. Prerequisites: MAT 103, MEC 235.

MEC-237 Advanced Hydraulic Controls — Fluidics (3 - 2 - 4)

Introduction to theory and application of basic fluidic mechanisms and their use in fluidic computers and control systems. Principles and design of oscillators, amplifiers, and/or devices. The use of these devices in simple and feedback controls will be evaluated. Prerequisite: MAT 201.

PHY-101 Properties of Matter (3 - 2 - 4)

A fundamental course covering basic principles of physics including solids and their characteristics, liquids at rest and in motion, gas laws and applications. Units of measurements and their applications are a vital part of this course. Laboratory experiments and specialized problems dealing with these topics are a part of this course. Prerequisite: MAT 100.

PHY-102 Mechanics (3 - 2 - 4)

Major areas covered in this course are force, motion, work, energy and power. Instruction includes such topics as vectors and graphic solutions, basic machines, friction and torque. Prerequisites: PHY 101, MAT 101.

PHY-103 Electricity (3 - 2 - 4)

Basic theories of A.C. and D.C. including the electron theory and production of electricity by chemical action, friction, magnetism and induction. Industrial applications involving the use of voltage, amperage, resistance, horsepower and wattage are major parts of the course. Prerequisites: PHY 101, MAT 102.

PHY-104 Light and Sound (3 - 2 - 4)

A survey of the concepts involving wave motion leads to a study of sound, its generation, transmission and detection. The principles of wave motion also serve as an introduction to a study of light, illumination and the principle involved in optical instruments. Application is stressed throughout. Prerequisites: MAT 101, PHY 102.

PSY-206 Applied Psychology (3 - 0 - 3)

A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community. Prerequisite: None.

SOC-201 Sociology (3 - 0 - 3)

A course designed to create a knowledge and awareness of the problems in society today and to fit the students for involvement in those problems that affect their personal lives. Emphasis is on the nature, definition, and analysis of major social problems. While the primary stress is on the sociological point of view, information from other fields in the social sciences is incorporated. Prerequisite: None.

VOCATIONAL EDUCATION

AHR-1110 Automotive Air Conditioning (2 - 3 - 3)

General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation and control; proper handling of refrigerants in charging the system. Prerequisite: PHY 1102.

AHR-1121 Fundamentals of Refrigeration: Domestic (3 - 12 - 7)

Terminology, laws of refrigeration, absolute pressure, and absolute temperature, energy conversion units; specific heat, laten heat, and sensible heat; measurement of heat in quantity and intensity; ton of refrigeration, pressure temperature relationships; transfer of heat by conduction, convection, and radiation; elementary refrigeration, refrigeration cycle and domestic refrigeration circuits and controls. Tools, materials and methods applicable to refrigeration; bending, and joining tubing. Safety practices will be stressed. Emphasis will be placed on domestic equipment because of its basic nature. Prerequisite: None.

AHR-1122 Fundamentals of Refrigeration: Commercial (3 - 12 - 7)

Commercial refrigeration Installation and servicing of display cabinets, walk-in coolers and freezer units and mobile refrigeration systems are studied. Catalogs are used to calculate heat loads, sizing and matching system components and a study of circuits and controls, refrigerants, oils, and methods are made. The American Standard Safety Code for refrigeration is studied and its principles practiced. Prerequisite: AHR 1121.

AHR-1123 Principles of Air Conditioning (4 - 9 - 7)

Work includes the selection of various heating, cooling, and ventilating systems, investigation and control of factors affecting air cleaning, movement, temperature, and humidity. Use is made of the psychrometric chart and sling psychrometer in determining needs to produce optimum temperature and humidity control. Commercial air conditioning equipment is assembled and tested. Heating and cooling loads are estimated and duct pressures are studied. Circuit and controls, both electric and pneumatic, are applied to heating and cooling. Practical sizing and balancing of duct work is performed as needed. Prerequisite: AHR 1122.

AHR-1124 Principles of Heating: Fuels and Burners (3 - 6 - 5)

Fuels and burners used in supplying heat for various types of heating systems — coal, oil, natural gas, manufactured gas, liquified petroleum gas, and electricity. Experiments in equipment selection, installation, adjustments, and servicing will be conducted. Warm air systems, heat emitter, electric heating, forced hot water and steam heating systems, including selection and sizing of equipment — registers, grills, furnaces, boilers, radiators, baseboards, piping, and ducts. Heating layout and specifications for an existing structure or one in blueprint stage will be prepared. Prerequisite: AHR 1123.

AHR-1126 All Year Comfort Systems and A.C. Servicing (4 - 9 - 7)

Emphasis is placed on the installation, maintenance, and servicing of equipment used in the cleaning, changing, humidification, dehumidification, temperature control, and distribution of air in conditioned spaces. Installation of various ducts and lines needed to connect various components is made. Shop work involves circuit and controls, testing and adjusting of air conditioning and regrigeration equipment, and locating and correction of equipment failure. Prerequisite: AHR 1124.

AHR-1127 Duct Construction and Maintenance (3 - 6 - 5)

Study of various duct materials including sheet steel, aluminum, fiber glass, and plastic. Safety, sheet metal hand tools, cutting and shaping machines, fasteners, and fabrication practices, layout methods, and development of duct systems. The student will study and service various duct systems and perform repairs including ducts made of fiber glass. A study is made of duct fittings, dampers and regulators, diffusers, heater and air washers, fans, insulation and ventilating hoods. Prerequisite: DFT 1116, AHR 1123. Corequisite: AHR 1126.

AUT-1101 Internal Combustion Engine (3 - 12 - 7)

Development of a thorough knowledge and ability in using, maintaining, and storing the various tools and measuring devices needed in engine repair work. Study of the construction and operation of components of internal combustion engines. Testing of engine performance; servicing and maintenance of engine block, crankshaft, pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing. Prerequisite: None.

AUT-1102 Engine Electrical and Fuel Systems (5 - 12 - 9)

A thorough study of electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment for the fuel and electrical system. Prerequisite: AUT 1101.

AUT-1121 Braking Systems (2 - 3 - 3)

A complete study of various braking systems employed on automobiles and light-weight trucks. Emphasis is placed on how they operate, proper adjustment, and repair. Prerequisite: PHY 1101.

AUT-1123 Automotive Chassis and Suspension Systems (3 - 9 - 6)

Principles and functions of the components of automobile chassis. Practical job instruction in adjusting and repairing of suspension, and steering systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, and front end alignment. Prerequisite: PHY 1101.

AUT-1124 Automotive Power Train Systems (2 - 8 - 5)

Principles and functions of automotive power train systems; clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair. Prerequisites: PHY 1102, AUT 1123.

AUT-1125 Automotive Servicing (3 - 9 - 6)

Emphasis is on the shop procedures necessary in determining the nature of trouble developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of experiences in testing, adjusting, repairing, and replacing. Prerequisites: AUT 1123, AUT 1121, AHR 1110.

BPR-1101 Blueprint Reading: Power Mechanics (0 - 3 - 1)

Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures, and notes. Prerequisite: None.

BPR-1104 Blueprint Reading: Mechanical (0 - 3 - 1)

Interpretation and reading the blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes. Prerequisite: None.

BPR-1105 Blueprint Reading: Mechanical (0 - 3 - 1)

Further practice of interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: BPR 1104.

BPR-1106 Blueprint Reading: Mechanical (0 - 3 - 1)

Advanced blueprint reading and sketching as related to detail and assembly drawings used in machine shops. The interpretation of drawings of complex parts and mechanisms for features of fabrication, construction and assembly. Prerequisite: BPR 1105.

BPR-1107 Blueprint Reading — Construction Trades (0 - 3 - 1)

How to read pictorial and orthographic drawings. Reading elevations, floor plans, symbols, notes, scales, construction types, interior and exterior details. Prerequisite: None.

BPR-1109 Blueprint Reading — Construction Trades (0 - 3 - 1)

Advanced reading of design variations, construction materials, practices, planning, specifications and steel structures. Prerequisite: BPR 1107.

BPR-1116 Blueprint Reading — Air Conditioning (1 - 3 - 2)

Reading of working prints, exploded drawings, wiring schematics, equipment layouts, shop sketches, building codes, heat systems, standards and symbols. Prerequisite; BPR 1104.

BPR-1117 Blueprint Reading: Welding (0 - 3 - 1)

A thorough study of trade drawings in which welding procedures are indicated. Interpretation, use and application of welding symbols, abbreviations, and specifications. Prerequisite: BPR 1104.

BPR-1208 Blueprint Reading: Tool and Die (2 - 3 - 3)

A complete and thorough knowledge of tool and die prints will be required. Industrial prints will be used in this course. The difference between production

drawings or operation sheets and tools drawing will be presented. Assembly drawings as the piece fits into place will be broken down into each detail print required. Prerequisite: DFT 1207.

BUS-1103 Small Business Operations (3 - 0 - 3)

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations. Prerequisite: None.

CAR-1101 Carpentry I (5 - 15 - 10)

This course will be presented as an introduction to the first steps necessary from the finished foundation to the complete framing of a building. Methods of framing entire walls before erection will be presented. Motion saving methods and overall planning of time will be presented. Size of nails and identification of nails will be studied.

CAR-1102 Cabinetmaking I (5 - 15 - 10)

This course is designed to introduce the student to hand tools used in a cabinet shop. After several projects with hand tools the student will be placed on each machine. Various types of wood will be used and identification of the various types of wood will be required.

CAR-1103 Carpentry II (0 - 15 - 5)

In this course the students will study all types of roof construction. Each student will be required to cut and assemble all types of rafters. Students will be required to put on all types of shingles and prepare a roof for "built up construction." The students will also be required to study the framing square in order to figure the length of rafters and cutting of all types of rafters and truss construction. Prerequisite: CAR 1101.

CAR-1104 Cabinetmaking II (0 - 15 - 5)

This course will go into the necessary framing for cabinet work. Students will be presented a study of built-in cabinets and pre-constructed cabinet work. Built-in book cases and special work will be presented. Prerequisite: CAR 1102.

CAR-1105 Carpentry III (0 - 15 - 5)

This course will present the student with the finish work of carpentry. Types of baseboard, moulding, door facing, and framing and finishing stair cases will be presented. Each student will be subjected to a series of projects under close supervision that will require use of all finishing tools normally used by a carpenter. Clean work and self pride will have an emphasis in this course. Prerequisite: CAR 1103, CAR 1104.

CAR-1106 Cabinetmaking III (0 - 15 - 5)

This is a study of the type of materials used on tops and other finished areas. Each student will study built-in appliances such as stoves, ovens, dishwashers, and refrigerators. Finished cornice and standard measurements of all cabinet work will be presented. Prerequisite: CAR 1103, CAR 1104.

DFT-1126 Pattern Development and Layout (0 - 3 - 1)

A study of methods used in layout of sheet steel. Special emphasis is placed on developing pipe and angle layouts by the use of patterns and templates. Prerequisite: BPR 1104.

DFT-1127 Construction Trades Drafting I (1 - 5 - 3)

Use of Instruments; lettering; preliminary sketches, foundation plan, floor plan, and exterior elevations for a residential or light commercial building; dimensioning practices; symbols; and convensions. Prerequisite: BPR 1109.

DFT-1128 Construction Trades Drafting II (0 - 3 - 1)

Structural plans and details including use of steel, concrete and timber; typical wall sections; and miscellaneous sections and details. Prerequisite: DFT 1127.

DFT-1207 General Machine Drafting (1 - 5 - 3)

Use of instruments; lettering; orthographic drawing, sections and primary auxiliary views; dimensioning; displacement, timing and motion diagrams; and cam layout. Prerequisite: BPR 1106.

DFT-1209 Tool Design and Planning (2 - 3 - 3)

This course will enable the student to plan the process of production and isolate the areas that must be tooled for production. Cost of tools, jig and fixtures, and gaging will be considered. Students will review available items from vendors and utilize standard bushing charts and other references. Typical tool design procedures will be employed and prints must reflect standard procedures. Prerequisite: DFT 1207.

ELC-1117 Basic Electricity (3 - 0 - 3)

A study of the electrical structure of matter and electron theory, the relationship between voltage, current and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits.

ELC-1118 Applied Electricity (3 - 2 - 4)

Provides fundamental concepts in single and polyphase, alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type of control used in small appliances such as: thermostats, timers, or sequencing switches.

ELC-1201 Electricity — Industrial (2 - 3 - 3)

A study of the relationship between voltage, current and resistance in series, parallel and combination circuits. Fundamental concepts of alternating current flow; a study of reactance, impedance, phase angle, power and resonance and alternating current circuit analysis.

ENG-1101 Reading Improvement (2 - 0 - 2)

Designed to improve the student's ability to read rapidly and accurately. Special machines are used as required for drill to broaden the span of recognition, to increase eye coordination, and to train for comprehension in larger units. Prerequisite: None.

ENG-1102 Communication Skills (3 - 0 - 3)

Designed to promote effective communication through correct language usage in speaking and writing. Prerequisite: ENG 1101.

MAT-1101 Fundamentals of Mathematics (5 - 0 - 5)

Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth. Prerequisite: None.

MAT-1103 Geometry (4 - 0 - 4)

Fundamental properties and definitions; plane and solid geometric figures, selected general theorems, geometric construction, areas and volumes of solids. Geometric principles are applied to shop operations. Prerequisite: MAT 1101.

MAT-1104 Trigonometry (3 - 0 - 3)

Trigonometric ratios; solving problems with right triangles, using tables, and interpolation; solution of oblique triangles using law of sines and law of cosines; graphs of the trigonometric functions; inverse functions, trigonometric equations. All topics are applied to practical problems. Prerequisite: MAT 1103.

MAT-1123 Machinist Mathematics (3 - 0 - 3)

Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems. Prerequisite: MAT 1104.

MAT-1203 Trigonometry (5 - 0 - 5)

A basic review of mathematics will form a foundation for a study of trigonometry of right triangles, oblique triangles, and dimensional analysis. Applications to typical problems found in the tool and die shop will be presented and solutions will be found by using mathematics. Prerequisite: MAT 1123.

MAT-1204 Compound Angles and Curves (5 - 0 - 5)

The application of trigonometry and geometry are presented to solve compound angle problems. This course will use as many practical problems as possible to enable the student to work with typical problems. Prerequisite: MAT 1203.

MEC-1205 Strength of Materials (5 - 0 - 5)

A study of stresses and shears that occur in materials when subjected to tensile compressive, and/or shearing forces. Stresses in thin walled cylinders, riveted and welded joints, shear and bending moment diagrams, deflection, eccentrically applied loads, torsion, and factors of column design will be emphasized. Prerequisite: MAT 1203.

MEC-1209 Hydraulics and Pneumatics (3 - 0 - 3)

A basic study of the principles of power hydraulics. Component parts such as reservoirs, strainers, filters, piping and fittings, motors, pumps, and valves will be thoroughly studied. Practical circuits and systems will be covered especially as they are used in the tool and die industry. Prerequisite: None.

MES-1101 Machine Shop (3 - 12 - 7)

An introduction to the machinist trade and the potential it holds for craftsmen. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.

MES-1102 Machine Shop (3 - 12 - 7)

Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course. Prerequisite: MES 1101.

MES-1103 Machine Shop (3 - 12 - 7)

Advanced work in the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder. Prerequisite: MES 1102.

MES-1104 Machine Shop (5 - 12 - 9)

Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry. Prerequisite: MES 1103.

MES-1112 Machine Shop Processes (0 - 5 - 2)

An introduction to machine shop. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.

MES-1115 Treatment of Ferrous Metals (1 - 3 - 2)

Investigate the properties of ferrous metals and tests to determine their uses. Instructions will include some chemical metallurgy to provide a background for the understanding of the physical changes and causes of these changes in metals. Physical metallurgy of ferrous metals, producing iron and steel, theory of alloys, shaping and forming, heat treatments for steel, surface treatments, alloy of special steel, classification of steels, and cast iron will be topics for study. Prerequisite: None.

MES-1116 Treatment of Non-Ferrous Metals (1 - 2 - 2)

Continuation of the study of physical metallurgy. The non-ferrous metals; bearing metals (brass, bronze, lead), light metals (aluminum and magnesium), and copper and its alloys are studied. Powder metallurgy, titanium, zirconium, indium and vanadium are included in this course. Prerequisite: MES 1115.

MES-1124 Metallurgy (2 - 1 - 3)

Introductory course in metallurgy, a basic study of the properties of metals and alloys. Analysis of the structure of metals and alloys, atomic structure, nuclear structure, and nuclear reactions. Slid (crystalline) structures, methods, methods of designating crystal planes, liquid and vapor phases; phase diagrams; and alloy systems. Prerequisite: None.

PHY-1101 Applied Science (3 - 2 - 4)

An introduction to physical principles and their application in industry. Topics in this course include measurement; properties of solids, liquids, and gases; basic electrical principles. Prerequisite: MAT 1101.

PHY-1102 Applied Science (3 - 2 - 4)

The second in a series of two courses of applied physical principles. Topics introduced in this course are heat and thermometry, and principles of force, motion, work, energy, and power. Prerequisite: PHY 1101.

PSY-1101 Human Relations (3 - 0 - 3)

A study of basic principles of human behavior. The problems of the individual are studied in relation to society, group membership, and relationships within the work situation. Prerequisite: None.

TDM-1201 Machine Processes (3 - 12 - 7)

This course is designed to introduce the student to the tools, instruments, machines, and methods used in the tool and die shop. Basic die-making theory will be presented as it pertains to simple piercing, blanking, and bending dies. Each student will be subjected to a series of projects requiring extreme proficiency. Prerequisite: Machine Shop graduate or equivalent.

TDM-1202 Machine Processes (3 - 12 - 7)

This course is a study of certain individual parts that go into a die assembly. Students will go into detail concerning their making, assembly, functioning and properties necessary for satisfactory service. Continued project work will point out the requirements for precise work. Prerequisite: TDM 1201.

TDM-1203 Metallurgy (3 - 0 - 3)

This is a study of a special group of steels used by the tool and die industry. Students are concerned with the selection, machining, and heat treating of these steels. Troubleshooting to find the reason for possible failure of the steel and the remedy required will be an important part of this course. Prerequisite: None.

TDM-1204 Machine Processes (3 - 12 - 7)

This course is a continuation of TDM 1202 in which students will make a detailed study of die-block construction, strippers and stock guides, shedders and knockouts, nest gages, and pushers. Project work has advanced to the finish grinding and assembly stage requiring high quality work from the student. Prerequisite: TDM 1202.

TDM-1206 Machine Processes (3 - 12 - 7)

A study of die stops completes the study of die components as presented in this course. Stock strip utilization and strip layout will be covered. Die sets

and purchased parts will be discussed. We will study die assembly, set up practices, punch press operation, and a miscellaneous group of methods necessary to complete this course. Prerequisite: TDM 1204.

TDM-1207 Special Problems and Molding (3 - 4 - 5)

This course will be used to subject the student to special problems within local industries. Numerous field trips will be scheduled to review installation of systems, development of dies, tools, jigs and fixtures, and gaging. Each student will be required to follow one complete system from the design stage through to production. Special procedures of die casting, sand casting, shell molding, injection molding, hydro forming, and others will be presented.

WLD-1101 Basic Welding (1 - 2 - 2)

Welding demonstrations by the instructor and practice by students in the welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding and flame cutting. Emphasis on electric arc and gas welding methods applicable to mechanical repair work. Bronze welding and silver soldering may also be covered.

WLD-1112 Mechanical Testing and Inspection (1 - 3 - 2)

The standard methods for mechanical testing of welds. The student is introduced to the various types of tests and testing procedures and performs the details of the test which will give adequate information as to the quality of the weld. Types of tests to be covered are: bend, destructive, free-bend, guided-bend, nick-tear, notched-bend, tee-bend, nondestructive, V-notch, Charpy impact, etc. Prerequisites: WLD 1120, WLD 1121.

WLD-1120 Oxyacetylene Welding and Cutting (3 - 12 - 7)

Introduction to the history of oxyacetylene welding, the principles of welding and cutting, nomenclature of the equipment, assembly of units. Welding procedures such as practice of puddling and carrying the puddle, running flat beads, butt welding in the flat, vertical and overhead position, brazing, hard and soft soldering. Safety procedures are stressed throughout the program of instruction in the use of tools and equipment. Students perform mechanical testing and inspection to determine quality of the welds. Prerequisite: None.

WLD-1121 ARC Welding (3 - 12 - 7)

The operation of AC transformers and DC motor generator arc welding sets. Studies are made of welding heats, polarities, and electrodes for use in joining various metal alloys by the arc welding process. After the student is capable of running beads, butt and fillet welds in all positions are made and tested in order that the student may detect his weaknesses in welding. Safety procedures are emphasized throughout the course in the use of tools and equipment. Prerequisite: None.

WLD-1122 Commercial and Industrial Practices (3 - 9 - 6)

Designed to build skills through practices in simulated industrial processes and techniques: sketching and laying out on paper the size and shape description, listing the procedure steps necessary to build the product, and then actually following these directions to build the product. Emphasis is placed on maintenance, repairing worn or broken parts by special welding applications, field welding and nondestructive tests and inspection. Prerequisite: WLD 1120, WLD 1121.

WLD-1123 Inert Gas Welding (1 - 3 - 2)

Introduction and practical operations in the use of inert-gas-shield arc welding. A study will be made of the equipment, operation, safety and practice In the various positions. A thorough study of such topics as: principles of operation, shielding gases, filled rods, process variations, and applications, manual and automatic welding. Prerequisites: WLD 1120, WLD 1121.

WLD-1124 Pipe Welding (3 - 12 - 7)

Designed to provide practice in the welding of pressure piping in the horizontal, vertical, and horizontal fixed position using shielded metal arc welding processes according to Sections VIII and IX of the ASME Code. Prerequisite: WLD 1121.

WLD-1125 Certification Practices (3 - 6 - 5)

This course involves practice in welding the various materials to meet certification standards. The student uses various tests including the guided bend and the tensile strength tests to check the quality of his work. Emphasis is placed on attaining skill in producing quality welds. Prerequisites: WLD 1120, WLD 1121, WLD 1123, WLD 1124.